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Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician, Royal National Sanatorium, Bournemouth

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ADDRESSES AND ORIGINAL ARTICLES

ACUTE OBSTRUCTION OF THE SMALL INTESTINE*

BY R. L. HOLT, M.D. Manc., F.R.C.S.
HON. SURGEON TO THE MANCHESTER NORTHERN HOSPITAL

EXPERIENCE has proved that the treatment of acute intestinal obstruction is not merely a matter of surgical technique. When the condition is recognised and treated in its early stages, the results are very satisfactory; but in the later cases, when the bowel has become damaged and systemic effects have manifested themselves, the relief of the obstruction is often not sufficient to prevent a fatal termination. The fundamental importance of early diagnosis and treatment cannot be emphasised too strongly; but for a variety of reasons many cases are seen by the surgeon for the first time several days after the onset. Even under modern conditions these cases have a mortality-rate of about 60 per cent., and their treatment presents a most serious problem to the surgeon. In one of his earlier articles the late Sir David Wilkie said that "any advancement in the treatment of acute ileus must be based on a more exact understanding of the relative importance of the various factors which make for a fatal issue in this malady." The immediate cause of death in human patients is often some obvious complicating factor, such as peritonitis or pneumonia, and the real difficulty is to explain the severe illness in the earlier stages.

The causes of intestinal obstruction have been the subject of detailed study in the past, and much valuable information has been gained; but in acute obstruction the cause is not so important as the effects. It is only by learning to treat the effects as well as the cause that any improvement in the treatment of obstruction is to be hoped for. The local and general effects have been investigated by numerous research-workers in the last twenty or thirty years, and it is now possible to give a fairly accurate account of the physiopathology of acute obstruction. The object of this paper is to recount briefly the information which experimental work has provided and to indicate the lines along which this knowledge can be usefully applied in clinical practice.

DEFINITION

Intestinal obstruction is divided into two types—mechanical and paralytic. In mechanical obstruction the contents of the intestine are prevented from passing along by an actual obstruction to the lumen of the gut. In paralytic obstruction the contents do not pass along because the intestinal muscle cannot provide the necessary propelling force. Mechanical obstruction is customarily divided into simple obstruction and strangulation. In simple obstruction there is a complete obstruction to the passage of the intestinal contents, and in strangulation there is, besides the obstruction of the lumen, an obstruction to the blood-supply of the obstructed gut. The distinction is not always clear-cut. Uncomplicated obstruction is rare clinically, for many cases which begin as an obstruction pass in their later stages into a condition which shows some of the elements of strangulation.

OBSTRUCTION

The function of the duodenum is primarily one of secretion, whereas that of the ileum is one of absorption. The volume of digestive fluids poured daily into the duodenum and absorbed at a lower level in the intestinal tract has been estimated at 5–7 litres. An obstruction in the upper part of the small intestine prevents the reabsorption of these secretions, which accumulate and distend the gut above the obstruction. Peristaltic activity is stimulated by the distension, and, besides causing the typical colicky pain of obstruction, the accumulating fluids are forced up into the stomach, from which they are vomited. Obstructions in the duodenum or upper jejunum are manifested by profuse vomiting, producing a continual loss of digestive secretions. When the lower part of the small intestine is obstructed, the picture is somewhat different. Occasionally such cases are marked by the early onset of profuse vomiting, but usually vomiting is not a feature in the early stages, because the ileum is able to absorb the greater part of the fluids passing down to it from the duodenum and jejunum. If reabsorption were complete, the signs and symptoms of obstruction would be absent; but usually absorption is incomplete, and a slowly progressive distension develops. The capillary and venous circulation is interfered with, giving the gut a congested appearance; there are submucous hæmorrhages; and patches of necrosis are found in the mucosa, especially on the antimesenteric border. The intestinal wall becomes thickened by plasma exuded from the capillaries, and from the same source comes the plasma-like peritoneal fluid. The intestinal muscle, perhaps as the result of overstretching or œdema, loses its tone and contractile power, tending to produce a partial or complete paralysis of the gut immediately above the obstruction. In such a way are produced the heavy, thick-walled, distended, and congested loops of small intestine so often seen at operation.

There are two main types of obstruction: high obstruction marked by profuse vomiting and loss of fluids, and low obstruction marked by progressive intestinal distension which causes severe local effects in the obstructed gut. Originally it was thought that the absorption of toxic substances from the foul contents of the obstructed loops of gut was the cause of death in all cases of obstruction. There was no difficulty in demonstrating the toxic qualities of numerous substances extracted from the contents of obstructed gut, but the general application of this theory had to be limited when it was shown, firstly, that animals with a high intestinal obstruction could be kept alive for long periods by the administration of sufficient quantities of normal saline; and, secondly, that normal intestinal mucous membrane prevented the absorption of these toxic products. There is general agreement among experimental workers that death in high intestinal obstruction is due not to toxæmia but to the progressive dehydration that results from the profuse vomiting. Toxæmia, however, is still held by most writers to be the cause of death in low obstruction. In these cases several investigators have not been able to prolong the lives of their animals by the administration of saline. In low obstruction degenerative changes in the mucosa of the obstructed loops of gut are usual, and it is alleged that these changes remove the normal protective barrier. Even so there is no direct evidence of such absorption. Many experiments have been

* A paper read to the Manchester Surgical Society on Nov. 15, 1938.

carried out with various readily recognisable substances, such as strychnine and methylene-blue, but the bulk of the evidence points unmistakably to the fact that, under the conditions existing in low obstruction, absorption from the intestine is actually diminished. It was with the idea of clearing up this problem that most of my experiments on obstruction have been concerned. They prove conclusively that toxic absorption is not a factor in low obstruction. It has been shown that animals given sufficient saline always live for three to four weeks unless the gut perforates above the obstruction and peritonitis sets in. The fact that the administration of saline in sufficient amount controlled the systemic effects of obstruction suggests that whatever these effects are they act by causing dehydration and secondary changes in the circulation.

Some explanation other than toxæmia is therefore necessary to account for the severe illness of patients with low intestinal obstruction. One fact has been clearly demonstrated experimentally in these cases—namely, that if distension of the gut is prevented the signs and symptoms of obstruction do not develop. The effects of distension of the gut are as follows:—

(1) *Reflex*: (*a*) vomiting; (*b*) increase in the secretions from the intestinal glands; (*c*) anorexia; and (*d*) pressor impulses.

(2) *Local*: (*a*) stasis of blood and œdema in the walls of the obstructed gut; and (*b*) partial or complete paresis of the intestinal muscle.

The first five factors have one common effect: direct or indirect dehydration of the body tissues and reduction of the blood volume. Vomiting and increased glandular secretion tend to drain the tissues of water and salts, and anorexia prevents their replacement. The pressor impulses, by maintaining a reflex vasoconstriction, tend directly to reduce the blood volume. Finally, the changes in the intestinal wall are very important. The stasis of blood in the vessels, the plasma exuded into the tissue spaces, and the peritoneal exudate remove plasma and whole blood from active circulation. The importance of this factor depends on the length of gut in which these changes are found. When approximately half of the intestine is affected, it has been estimated that the volume of blood and plasma removed from circulation amounts to 20–30 per cent. of the initial blood volume.

All these factors play their part wherever the obstruction is situated in the small intestine, and the predominance of one or other explains the variability of the symptoms. In obstruction of the duodenum profuse vomiting is the most pronounced symptom, and sufficient fluid and salts may be lost to cause death from dehydration. In consequence an examination of the blood shows a reduction in the chloride value and a lowering of the blood volume. In low obstructions vomiting is not so profuse and may be absent for several days. It is only in those patients who vomit profusely that there is any rapid deterioration in the general condition. It is in low obstruction that the effects of the factors of limitation of intake of fluid and salts and the loss of plasma and whole blood into the distended gut are seen. It is sometimes suggested that the dehydration of the patient is greater than can be accounted for by the fluid lost by vomiting and into the obstructed loops of gut. The volume of fluid normally lost daily by the average patient has been estimated to be about 4000 c.cm.: 2000 c.cm. by perspiration and by vaporisation in the breath; 500 c.cm. by the intestinal tract; and 1500 c.cm. by the kidneys excreting urine at a specific gravity of 1·015.

The loss by perspiration and respiration, the so-called insensible loss, continues until sufficient fluid has been lost to equal 6 per cent. of the body-weight, by which time signs of dehydration are evident. In low obstruction the replacement of this fluid is quite inadequate, and, if to this loss are added the fluid lost by vomiting and into the loops of gut and the blood and plasma withheld from the circulation, it becomes evident that a very severe dehydration may result from the combined effects of these losses. In my opinion these losses are the direct cause of the poor general condition of patients with a low intestinal obstruction. In some cases the effects of the severe dehydration are sufficient to cause death, but in other cases, although the patient is reduced to a very low state by the dehydration, death is due to peritonitis or such a terminal complication as bronchopneumonia.

STRANGULATION

The occurrence of strangulation adds a most serious complication to intestinal obstruction. Theoretically it is possible for both the arteries and the veins of a strangulated loop of gut to be obstructed, but in practice only the veins are obstructed. The effect of such venous obstruction is that the tissue spaces become filled with red cells, the lumen of the gut is distended with a thick red exudate, and a fluid indistinguishable from plasma exudes from the peritoneal surface of the gut. The organisms in the lumen proliferate and invade the bowel wall, the tissues of which disintegrate progressively until ultimately perforation takes place. In experimental strangulation the survival period and the cause of death depend on the length of gut involved in the strangulation. The experimental long-loop strangulation is chiefly of academic interest, since strangulation of loops of such length in man must be rare. In animals the strangulation of half or more of the small intestine causes what is to all intents an acute internal hæmorrhage. This blood-loss may, however, be important in certain cases of acute intussusception, volvulus, and mesenteric thrombosis. Strangulation of even so-called moderate-sized loops, such as are used experimentally, in which about a quarter of the small intestine is strangulated, does not often take place in man. In these cases the passage of blood into the tissues of the strangulated loop does not continue indefinitely, for after a time thrombosis occurs in the capillaries and smaller veins. Attention is turned to the fluid exuded from the strangulated loop. At first indistinguishable from plasma, the fluid soon becomes darker and develops depressor qualities when injected intravenously. The depressor substance present in the early samples is akin to histamine. Later the fluid becomes almost black and acquires the odour characteristic of gangrenous gut. This later exudate is very toxic and, if injected intraperitoneally in sufficient quantity, will kill normal animals. The exact nature of this toxin is not known, but it is akin to the proteoses and is produced by the action of proteolytic bacteria on the tissues of the intestinal wall. In animals with a strangulation of a quarter of their small intestine the cause of death is the absorption of this toxic exudate from the peritoneal cavity. The fact that toxic subtances are produced in the tissues of strangulated gut and pass into the peritoneal fluid shows the importance of handling the strangulated loops as little as possible

within the peritoneal cavity and of removing the peritoneal fluid by suction.

The short loops used experimentally are similar to those which are most often strangulated in clinical practice. In these cases perforation of the loop is always found at autopsy, and peritonitis is the cause of death; but perforation does not necessarily cause a widespread virulent peritonitis. This is especially true when, instead of the gut perforating suddenly and flooding the peritoneum, there is a gradual seepage of the contents through the gangrenous wall of the gut. This fact is illustrated by two cases from my practice which came to operation with the preoperative diagnosis of a pelvic peritonitis of uncertain origin. Both patients had been ill three days before being sent to hospital. In each case about 2 ft. of collapsed gangrenous small intestine was found to be the cause of the peritonitis, and both patients survived a resection and anastomosis with little apparent difficulty. I do not wish to imply that the factors of blood-loss into the strangulated loop and the absorption of toxic exudate are unimportant. It is true that they are not the immediate cause of death in short-loop strangulation, but they are present and help to undermine the general condition of the patient. Most strangulations in clinical practice take place in hernial sacs. The constriction at the neck of the sac and the adhesions that form there not only delay absorption of any exudate but also tend to localise the infection that follows perforation of the loop. Such patients can therefore survive for longer periods than would be the case if the strangulation had taken place in the general peritoneal cavity. It is in these cases with their larger survival period that the effects of the intestinal obstruction, which always accompanies a strangulation, become pronounced. It is possible to recognise cases in which the effects of the strangulation itself predominate and others in which the effects of the accompanying obstruction appear the more important.

TREATMENT

The two factors which adversely affect the treatment of acute obstruction are (1) delay in instituting treatment and (2) the presence of strangulation.

The time-factor in the treatment of acute obstruction is most important. Delay allows the systemic and local effects of the obstruction to add serious operative and postoperative risks. In the early case the relief of the obstruction cures the patient, but in later cases similar treatment often does not prevent a fatal result. It is in the treatment of these later cases that considerable improvement is possible by applying the information which experimental work has produced. In the absence of strangulation there is no toxæmia, and the poor condition of the patients is the result of the systemic effects of intestinal distension. The systemic effects, apart from lowering the general condition of the patient and rendering him more than usually susceptible to postoperative complications, make administration of an anæsthetic risky. It is not generally realised how great the dehydration may be, though some clinical indication of this is provided by the sunken eyes and shrinkage of the subcutaneous tissues. The dehydration of the tissues is well advanced before the blood volume is reduced. It is easy to be misled by an apparently normal systolic blood-pressure and only slightly raised pulse-rate. These cases of obstruction provide some of the commonest examples of the condition that Zachary Cope has described as latent shock. The pulse-pressure and pulse-rate may remain normal after the blood volume is considerably reduced. In fact this variety of shock may be accompanied by a rise in blood-pressure which is merely an overcompensation to a circumstance which tends to cause a fall of blood-pressure. The whole of the mechanisms by which the body attempts to maintain an efficient circulation have been mobilised. Many of these are nervous mechanisms and are easily put out of action by an anæsthetic. Serious or fatal results may follow the administration of an anæsthetic unless measures are taken beforehand to restore the blood volume.

When the possibility of strangulation does not enter into the diagnosis, there is no overwhelming urgency to hurry the patient into the operating-theatre. At least two or three hours can be profitably spent in carrying out a routine preoperative treatment. In general it can be said that the more pronounced the dehydration the longer this preoperative preparation should be. In the late cases the relief of the obstruction is not so important as the adoption of measures to relieve the intestinal distension and to replace some of the fluid lost. If these measures are not carried out adequately, it will be found that many patients "peter out" within twenty-four hours of operation. The patient should be treated along the usual "anti-shock" lines—i.e., thoroughly warmed with hot blankets or bottles, given an injection of morphine, and transfused with saline administered by a continuous intravenous drip. About 1000 c.cm. of normal saline should be given to the average patient before operation; but, if more than two or three hours is taken over the preoperative preparation because of severe dehydration, the volume of saline should be increased. Hypertonic saline should not be given, for its use is based on a mistaken conception of the importance of the loss of sodium chloride as the cause of the illness. The stomach must be emptied, preferably by a Ryle's or similar tube, which ought to be left in position during and after the operation. With such measures the patient's general condition is found to improve considerably, and operation may now be more safely undertaken. The anæsthetic of choice is unquestionably spinal anæsthesia, but it is only safe if measures have been taken to restore the blood volume. In strangulated hernia in very old patients local anæsthesia may be preferable to spinal anæsthesia. The presence of several feet of thick-walled, distended, and congested gut may tempt one to perform an enterostomy, but except in rare cases this is not necessary. It has been found in practice that continuous siphonage of gastric and duodenal contents through a Ryle's tube is just as effective as an enterostomy, and its use does not carry with it the very real danger of peritonitis which an enterostomy introduces. Some idea of the prognosis can be gained from the state of the gut above the obstruction. If under spinal anæsthesia there is a segment of gut that does not show any muscular contractions, especially when stimulated by pinching, paralytic ileus is to be expected.

When strangulation is suspected, the emptying of the stomach and the administration of intravenous saline must be hastened and operation carried out as soon as possible. No delay is justifiable, because of the danger of viable gut becoming gangrenous. Certain precautions are suggested by experimental work. The abdominal incision should be large enough to allow the strangulation to be freed rapidly. The excessive manipulation of strangulated loops within the peritoneal cavity is dangerous, for it is likely to increase the amount of toxic products passing into

the peritoneal fluid. The peritoneal fluid should be removed by suction while the viability of the strangulated gut is being decided. In no circumstances should gut about which there is any doubt of viability be returned to the peritoneal cavity, because of the very serious risk of perforation and peritonitis. For the same reason the oversewing of gangrenous constriction-rings in the gut is not without risk. If the patient's general condition does not warrant an immediate resection and anastomosis, the loop of gut should be exteriorised. It may be left in the subcutaneous tissues or on the surface of the abdominal wall and dealt with later

The treatment of acute intestinal obstruction does not end with a successfully completed operation. The measures begun before operation to remedy dehydration must be continued for several days after operation. One of the most serious effects of intestinal distension is the partial or complete paralysis of the intestinal muscle of the distended gut. Treated on the correct lines most of these cases settle down; but, if the gut is stimulated by purgatives and other drugs, a paralytic ileus often results. It is most important to regard and treat every case operated on for acute intestinal obstruction or strangulation as a potential case of paralytic ileus. Fluids should only be allowed very sparingly by mouth and in many cases prohibited altogether, unless continuous gastric siphonage is being carried out. Fluid is best given as normal saline by a continuous intravenous drip, but rectal and subcutaneous routes may be employed. About 4–5 pints daily is usually sufficient for an adult. Purgatives and drugs which normally stimulate peristaltic action are contraindicated. The habitual use of such drugs as Pituitrin, eserine, and acetylcholine in the postoperative treatment of these cases is to be strongly condemned. Occasionally their use produces the dramatic relief of intestinal distension, but these successes are far outnumbered by the majority of cases which are made worse by such treatment. It should be borne in mind that the cause of the trouble is a paresis of the intestinal muscle which will resume its function when it has recovered its tone. This recovery is best facilitated by resting the gut as much as possible. It is for this reason that fluids by mouth are restricted or prohibited. Morphine is very valuable in these cases and should be given in small doses at regular intervals—e.g., gr. ¼ four-hourly. If the case progresses satisfactorily, the abdominal distension gradually disappears and the bowels are naturally moved about the fourth day. After this the restriction on fluids by mouth may be withdrawn and treatment carried out along ordinary lines.

PARALYTIC ILEUS

There are many causes of paralytic ileus, but, so far as the surgeon is concerned, it most often complicates cases of peritonitis and of intestinal obstruction. It produces a painless progressive distension of the abdomen, which in the later stages is associated with vomiting and is apt to bring to a fatal ending what appeared to be a successful operation. It leads to a progressive circulatory failure along the lines outlined under mechanical obstruction. Its development can often be prevented by adopting the measures already described. Once it has developed, by far the most satisfactory method of treatment is one which has been described by American writers as "intestinal decompression." The principle of the method is the adoption of continuous mild suction through an indwelling catheter in the stomach or duodenum. A Ryle's or similar tube is passed through the nose or mouth and attached to an apparatus which provides a continuous slight suction, or aspiration with a syringe may be applied at short intervals. It has been shown that the intestinal tract can be drained as far as the ileocæcal valve by such means. The patient obtains prompt relief from vomiting and from the discomfort due to abdominal distension. It is preferable to allow fluids by mouth as soon as the apparatus is functioning, for this measure keeps the mouth fresh and gives much comfort to the patient. No harm is done, for the fluid is promptly siphoned back through the indwelling tube. Careful note should always be kept of the volume of fluid given by mouth and of that removed by the tube. In the early stages of treatment more fluid is removed than swallowed. If the reverse happens, the stomach-tube is partially blocked or kinked. The fluid removed at first is usually brown foul-smelling contents of the small gut. Later this changes to clear bile-stained fluid, and finally, as the intestine recovers its function, it is found that less fluid is removed by the stomach-tube than is taken by mouth. Morphine is given in doses of gr. ¼ four to six times daily. Fluid is supplied by a continuous intravenous drip in amounts of about 4–5 pints daily. Greater amounts should not be given, because of the danger of setting up œdema of the lungs and pneumonia. The condition is usually found to be resolving about the third or fourth day after treatment is begun. It is customary for the bowels to act naturally about the fourth day; if not, a glycerin enema is given. No purgatives or drugs such as pituitrin, eserine, or acetylcholine are to be given during the above treatment, for their use has been proved to aggravate the intestinal paresis.

The results of this treatment are extremely good. I have given up enterostomy completely since I began to use this method. In the past few years I have seen this treatment carried out in many cases of ileus. In those cases which were not due to a peritonitis—they now mount up to about 30—there have been two deaths: one from pulmonary embolism and one from the results of the ileus. In this latter case treatment was, in my opinion, instituted too late. The results in cases due to peritonitis are very encouraging but naturally not so satisfactory. The method of intestinal decompression relieves the abdominal distension and gives the patient a better chance to localise the peritoneal infection. But these cases have a way of slipping through one's fingers. I can recollect three patients with ileus following appendicitis with general peritonitis who recovered from both the ileus and the peritonitis only to die from bronchopneumonia. Such disappointments, however, do not detract from the value of the treatment.

CONCLUSIONS

Treatment of acute intestinal obstruction along the lines outlined is applicable chiefly to those cases in which there has been some delay in instituting treatment. For the very late case it is doubtful whether much good can be done. In these cases it appears that irreversible circulatory changes have taken place. There is a general increase in capillary permeability, and fluid injected intravenously rapidly passes out of circulation, carrying plasma proteins with it. They are usually described as inoperable, and sometimes a gallant attempt is made under local

anæsthesia to relieve the distension. A good case can be made out for treating them by intestinal decompression and subcutaneous saline and making no effort to relieve the obstruction until the patient has obviously survived the systemic effects of the obstruction.

The treatment outlined above has been based on an understanding of the general and local effects which follow the onset of acute intestinal obstruction. I have no doubt that improved results will follow the general adoption of such measures, but any success which may follow must not be allowed to obscure the fundamental point in the treatment. No understanding, however thorough, of the physiopathology of this condition will compensate for undue delay in treatment. Early diagnosis and treatment must always remain the aim of the surgeon in dealing with acute intestinal obstruction.

THE MECHANISM OF DIABETES MELLITUS *

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II—THE CONTROL OF THE BLOOD-SUGAR LEVEL

In the different examples of variation in the blood-sugar level which have been considered it has been possible to trace the workings of an underlying purpose: that the head of pressure of sugar in the blood, in the circumstances existing at any particular time, is adjusted to maintain the adequate utilisation of sugar by the tissues. The mechanism by which these adjustments in the head of pressure of blood-sugar are brought about must now be discussed; but, before doing so, it is necessary to consider the effect of two factors: absorption of sugar from the intestines, and removal of the blood-sugar by the extrahepatic tissues, which do not appear to be directly concerned in this purposive adjustment.

ABSORPTION OF CARBOHYDRATE FROM THE INTESTINE

It has been shown by Cori [24 25] and by Verzár [134] that absorption of glucose from the gut is an active and not a purely physical process. When a solution of glucose enters the gut, absorption begins at a maximal rate and proceeds at this rate, irrespective of either the amount or the concentration of the glucose present, until all the glucose is absorbed. These findings agree with the observation that the blood-sugar tolerance curve of the healthy human subject is practically uninfluenced by increasing the dose of oral glucose above a certain minimal dose and are in accord with the constancy of the blood-sugar curve under standard conditions. In fig. 5 are shown two blood-sugar tolerance curves after ingestion of a standard dose of glucose, which were obtained from a healthy but very nervous subject. On the first occasion half an hour elapsed after the glucose was taken before any rise of blood-sugar was detected. On the second occasion, after he had become accustomed to the test, the blood-sugar rose immediately. The area of each sugar-tolerance curve after it began to rise is the same. This experiment suggests that on the first occasion passage of glucose from the stomach to the intestines was delayed, but, when the sugar entered the intestines, absorption proceeded at the normal rate. It is possible that absorption from the intestines proceeds on an "all or none" principle. The tacitly accepted view that hyperglycæmia following ingestion of sugar is accounted for by the excess of absorbed sugar entering the blood has been questioned by Heténvi. [33 56] Struck by the fact that after the ingestion of glucose the rise of blood-sugar could often be detected within two minutes, he suggested that alimentary hyperglycæmia was largely due to reflex liberation of sugar from the liver. Unfortunately no sure proof of this attractive hypothesis has been brought forward, but the hypothesis would certainly explain the purposive variations in the glucose-tolerance curve.

In certain conditions, such as sprue and cœliac disease, a low blood-sugar tolerance curve is obtained. Fairley [39] and Ross [115] have recently shown that the intravenous blood-sugar tolerance curve in such diseases is unusually high, and they have suggested that the characteristically low oral tolerance curve is produced by defective absorption. If Heténvi's hypothesis proves to be correct, it may well be that the low curves in sprue and cœliac disease are due to diminution in the amount of glycogen in the liver, in which case the hyperglycæmia after injection of adrenaline should be slight.

In view of the constancy of glucose absorption from the gut and the constancy of the blood-sugar tolerance curve in each of several standard sets of conditions (table I in Lect. I) it appears that the factor of intestinal absorption plays little part in determining the blood-sugar curve of persons without intestinal disease.

REMOVAL OF SUGAR FROM THE BLOOD

The outflow of sugar from the blood may be due either to its escape into the urine or to its removal by the tissues. It is commonly believed that, when the blood-sugar level exceeds the renal threshold, the sugar which escapes into the urine materially reduces the blood-sugar level. The evidence presented in Lect. I shows that, in ordinary circumstances, this is not so. When, however, the loss of sugar in the urine is rapid and excessive, as is seen after poisoning with phloridzin, the blood-sugar level may fall, but only after the liver has made extreme efforts to conserve it at its normal level. I believe that in all other conditions, save possibly diabetic coma, the blood-sugar level is uninfluenced by

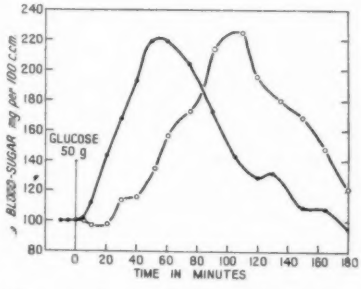

FIG. 5—Two blood-sugar tolerance curves obtained from the same healthy subject when he was taking the same low-carbohydrate diet. In one experiment the subject was nervous and the rise of blood-sugar after ingestion of the glucose was delayed (circles); in the other experiment (disks) the rise was immediate. Both sugar-tolerance curves are nevertheless of the same size.

* The Goulstonian lectures for 1939 delivered before the Royal College of Physicians of London on March 2, 7, and 9. Lect. I appeared in our last issue and the second part of Lect. II and Lect. III, together with the references, will appear in later issues.

glycosuria. In diabetic coma the demands on the liver for sugar may be so excessive that they can be met, if at all, only with difficulty. In these circumstances the augmentation of such demands by wastage of sugar in the urine may cause a demand on the liver for more sugar to which it cannot respond, with the result that the hyperglycæmia is not fully maintained.

It is also doubtful whether excessive utilisation of sugar from the blood by the peripheral tissues ever results in a fall of blood-sugar, for it is improbable that the rate of this utilisation ever exceeds the capacity of the liver to supply equivalent amounts of sugar to the blood. In Graves's disease the total metabolism is increased, and, the proportions of the different foods oxidised remaining normal,[35] the peripheral utilisation of sugar must presumably be increased. Yet spontaneous hypoglycæmia does not occur, nor does the blood-sugar curve fall more rapidly. On the other hand, in diabetics who develop thyrotoxicosis this complication is accompanied not by a fall but by an elevation of the general level of hyperglycæmia, and with cure of the thyrotoxicosis this hyperglycæmia diminishes. When the peripheral utilisation of sugar is reduced or abolished in animals by poisoning with such substances as hydrocyanic acid[107] or iodo-acetic acid[76] or by lack of oxygen,[88] the blood-sugar rises. This, of course, may be due to the direct effect of such poison or of anoxæmia on the liver, but it may also be due to the reduction in ability of the tissues to oxidise carbohydrate, causing a condition of carbohydrate starvation of the tissues, in an effort to remedy which the liver pours out an excess of sugar into the blood. Reference can here be made to the conception of tissue storage of glucose developed by Soula.[127] According to this conception, when an excess of sugar enters the blood-stream much of this diffuses into the peripheral tissues and then, as the blood-sugar falls, slowly returns to the blood. In conjunction with McNair Scott[70] I have obtained results compatible with the existence of a peripheral source of blood-glucose.

It is thus doubtful whether either the rate of absorption of sugar from the intestine or the rate of removal of sugar from the blood by the extrahepatic tissues plays a part in the adjustment of the blood-sugar level. They appear rather as factors which, by influencing the movement of sugar into or out of the blood, call into play the active mechanisms which adjust the head of pressure of blood-sugar to the appropriate level.

MECHANISMS INVOLVED IN THE ADJUSTMENT OF THE BLOOD-SUGAR LEVEL

At the centre of the mechanism adjusting the head of pressure of blood-sugar stands the liver. It is the effector organ directly producing the compensatory variations in the blood-sugar level. In hepatectomised animals the blood-sugar falls steadily until death results from hypoglycæmia, thus showing that in the fasting organisms the liver is constantly secreting sugar into the blood and so maintaining the blood-sugar at the appropriate level.[90 91] In the liver carbohydrate is stored as glycogen, and this constitutes the source of blood-glucose. Liver-glycogen can be formed from materials other than glucose such as proteins, hexoses other than glucose, glycerol, and lactic acid. That the transformation of these substances to glucose in the intact animal is brought about by the liver is indicated by the fact that in the hepatectomised animal none of them can relieve hypoglycæmia.[91] It is still a controversial question whether liver-glycogen can be formed from fatty acids, but evidence is steadily accumulating in favour of this view.[122 139] The liver, therefore, not only secretes but manufactures glucose, and the rate at which these reactions of the liver proceed is largely governed by the various endocrine glands, the function of which may now briefly be reviewed.

PITUITARY GLAND

The association between disease of the pituitary gland and abnormal carbohydrate metabolism has been known since Pierre Marie recorded the frequent occurrence of glycosuria in acromegalics, and the more recent recognition by Cushing[29] of the frequency of glycosuria in cases of pituitary basophilism has strengthened the clinical evidence for this association. The demonstration by Burn[17] that the extract of the posterior lobe of the gland, pituitrin, raised the blood-sugar directed attention to the posterior lobe as the source of the disturbance of carbohydrate metabolism in these diseases, but recently the brilliant work of Houssay and his school has pointed attention to the anterior lobe. The large volume of work on the relationship of the anterior-pituitary gland to carbohydrate metabolism has been reviewed by Houssay[72 73] and by Russell,[117] and reference can be made to their articles for the extensive bibliography on this subject.

The problem of the influence of the anterior-pituitary gland on the activities of the liver can best be approached by considering the effect of removing this gland on a condition with which we are already familiar. We have seen that, when a normal fasting animal is poisoned with phloridzin, the head of pressure of blood-sugar falls because of the drain of the excessive glycosuria, and in an attempt to maintain the head of blood-sugar pressure the liver pours sugar into the blood rapidly. This sugar is derived in the first place from the carbohydrate stored in the liver as glycogen and later, when this store proves insufficient, from sugar manufactured in the liver out of body protein and possibly out of fat. The excessive breakdown of body protein is revealed by an increased excretion of nitrogenous substances in the urine; the excessive combustion of fat by the excretion of ketone bodies. When, however, a hypophysectomised animal is poisoned with phloridzin, the findings are quantitatively different in two important respects: the excretion of urinary nitrogen is little more than normal,[14] and ketonuria is either absent or minimal.[113] This indicates that in the hypophysectomised animal poisoned with phloridzin there is little acceleration in the rate of destruction of protein and of fat, and we can infer from this finding that after hypophysectomy the ability of the liver to form sugar from non-carbohydrate materials is impaired. This effect of removing the anterior-pituitary gland is further illustrated by the influence of hypophysectomy on pancreatic diabetes. Soon after removing the pancreas from a dog the blood-sugar rises and glycosuria develops. Later the urinary excretion of nitrogen rises and ketonuria develops, indicating that the rate at which protein and fat are being broken down is accelerated.[136] If now the anterior-pituitary gland is removed, the excretion of urinary nitrogen and the ketonuria diminish, and at the same time the blood-sugar level falls and glycosuria decreases.[72 73] Hypophysectomy has impaired the ability of the liver to form sugar from non-carbohydrate materials and to maintain the blood-sugar at the high level characteristic of diabetes.

In these two conditions, phloridzin poisoning and pancreatectomy, the liver is secreting sugar into the

blood at an excessive rate, and the question arises as to the effect of hypophysectomy on the liver when it is secreting sugar at normal rates. What part does the anterior-pituitary gland play in determining the supply of sugar to the blood in normal circumstances? After removal of the hypophysis from a normal animal there is a pronounced tendency for the blood-sugar level to fall on fasting, and not uncommonly such animals die from hypoglycæmia.[23 24] Cope has shown that this fall of blood-sugar does not take place before the glycogen content of the liver is greatly reduced, and that after death glycogen is present in the liver only in traces.[23] This abnormal reduction of liver-glycogen by fasting can be attributed to the impaired ability of the liver to manufacture sugar from non-carbohydrate sources and thus replenish its store of glycogen. The hypoglycæmia exhibited by the fasting hypophysectomised animal demonstrates that in the absence of the pituitary gland the liver cannot maintain the normal supply of sugar to the blood, and in this connexion the evidence that after removal of the anterior-pituitary gland the glycogen in the liver is resistant to mobilisation as sugar is important.[23] Further proof is, however, required on this point. It appears, therefore, that removal of the anterior-pituitary gland impairs the hepatic mechanism concerned with the maintenance of the appropriate head of pressure of sugar in the blood and reduces the ability of the liver to manufacture sugar from non-carbohydrate materials.

These functions of the liver can be restored to full activity in hypophysectomised animals, and stimulated to excessive activity in normal animals, by injection of extracts of the anterior-pituitary gland. When such an extract is injected into the hypophysectomised animal, the tendency for the blood-sugar to fall spontaneously disappears. When the extract is injected into a hypophysectomised depancreatised dog, the amelioration of the diabetes, consequent upon hypophysectomy, is removed. Hyperglycæmia and glycosuria become severe, the excretion of urinary nitrogen rises, and ketonuria develops.[72 73 117] Formation of sugar from non-carbohydrate sources has again been raised to the excessive rate prevailing in the ordinary depancreatised dog. Similar effects are produced even in the normal animal. After injection of the extract hyperglycæmia, glycosuria, and ketonuria appear, but in the normal animal, for some reason that is not yet understood, the excretion of urinary nitrogen does not increase. For the manifestation of these effects the liver is essential.[73] It has been suggested by Cope and Marks[23] that anterior-pituitary extracts also facilitate the mobilisation of liver-glycogen. Their suggestion was based on the observation that the hyperglycæmia following subcutaneous injection of adrenaline was increased in animals treated with these extracts. This suggestion has recently been criticised because it has since been found that the hyperglycæmia after intravenous injection of adrenaline is not increased.[118 141] But the facts that after injection of the extracts slight external stimuli readily produce hyperglycæmia,[23 141] and that in partially hepatectomised animals treated with these extracts a fall in blood-sugar leads to an excessive outflow of sugar from the liver,[69] both point to the increased facility with which the liver supplies sugar to the blood in these circumstances. Whatever the decision on this point, however, it appears that extracts of the anterior-pituitary gland accelerate the formation of sugar by the liver from non-carbohydrate sources and facilitate the hepatic mechanism concerned with the maintenance of the blood-sugar level (table III). It is thus clear that the anterior-pituitary gland is of the utmost importance to the liver for its functions of manufacturing glucose from non-carbohydrate sources and of supplying sugar to the blood at rates sufficient to maintain the appropriate head of blood-sugar pressure.

TABLE III—EFFECT OF ANTERIOR-PITUITARY GLAND ON CARBOHYDRATE METABOLISM

Anterior-pituitary gland

Liver Facilitates	Peripheral Tissues Retards
(1) Formation of sugar from non-carbohydrate sources	(1) Insulin action on blood-sugar
(2) Breakdown of glycogen to blood-sugar	(2) Muscle-glycogen formation
	(3) Oxidation

In the foregoing considerations attention has been confined to the effects of the anterior-pituitary gland on the liver—i.e., to the effects upon the production of sugar. But the anterior-pituitary gland also influences the disposal of the blood-sugar, and the most striking example of this is its effect on insulin action.[72 73 117] If insulin is injected into an animal which has previously been treated with extracts of the anterior-pituitary gland, it does not depress the blood-sugar.[23 139 141] This antagonisation of insulin action might be due to one of two causes: either the extracts directly inhibit the action of insulin in accelerating the rate at which the peripheral tissues remove sugar from the blood, or they merely mask insulin action by promoting an excessive outpouring of sugar from the liver. The former possibility has been proved to be correct. Marks,[98] in 1936, showed that the effect of insulin in promoting formation of muscle-glycogen in decapitated eviscerated preparations was greatly reduced if the animals had previously been treated with anterior-pituitary extracts, and later Himsworth and Scott [69] showed that these extracts also abolished the action of insulin in accelerating the fall of blood-sugar in hepatectomised animals. Factors are therefore present in the anterior-pituitary gland which reduce the action of insulin in the peripheral tissues.

We have previously seen that the reduction in insulin sensitivity which follows restriction of dietary carbohydrate is a phenomenon localised in the periphery, and the question now arises as to whether the variations in sugar tolerance and in insulin sensitivity produced by dietary change are referable to changes in the activity of the anterior-pituitary gland. McNair Scott and I [88] investigated the effect of restriction of dietary carbohydrate on hypophysectomised rabbits and found that the normal effect of this measure in impairing sugar tolerance and insulin sensitivity was greatly reduced, if not entirely lacking. We found further that injection of an extract of the anterior-pituitary gland into these animals resulted in an impairment of sugar tolerance and of sensitivity to insulin similar to that which develops in normal animals after starvation or restriction of dietary carbohydrate. It therefore appears possible that the changes in insulin sensitivity and the correlated changes in sugar tolerance which result from dietary variations can be explained in part, if not entirely, by variations in the rate of secretion of a factor from the anterior-pituitary gland.

The association of impaired insulin sensitivity and diminution in the ability to oxidise glucose has been

emphasised previously, and it is therefore of interest that evidence has been produced indicating that the anterior-pituitary gland has an influence on the oxidation of glucose.[72 73 117] When pituitary extracts are injected into normal animals, the respiratory metabolism becomes such as is usually taken to denote minimal combustion of carbohydrate.[43 101 116] In the depancreatised dog the respiratory metabolism is of this type, and administration of glucose to these animals does not produce the usual increase in respiratory quotient and oxygen consumption. If, however, the hypophysis is removed from a depancreatised dog, the respiratory metabolism now suggests that the ability to utilise carbohydrate has been partially restored.[13 74 120] The prolonged survival of hypophysectomised depancreatised dogs, in comparison with ordinary depancreatised dogs, is perhaps to be attributed as much to this restoration of their ability to use carbohydrate as to the fact that the production of ketones in these animals is insufficient to cause fatal ketosis.

One may well ask at this stage what function the anterior-pituitary gland subserves in the economy of the normal animal. The gland appears to be concerned with the reaction to deprivation of carbohydrate. It seems that, when carbohydrate is restricted, the anterior-pituitary gland is stimulated to an increased secretion of its factors. By retarding oxidation of sugar and insulin action in the peripheral tissues it economises utilisation of the blood-sugar, and by facilitating increased production of sugar from non-carbohydrate sources in the liver it augments the amount available for maintaining the blood-sugar level (table III). When the restriction of utilisable carbohydrate is more severe than in simple starvation, as when through lack of insulin the body loses to a great degree its ability to use carbohydrate, these same reactions are called into intense activity, with the result that their manifestations dominate the clinical picture.

ADRENAL GLANDS

It is well established that the secretion of the adrenal medulla, adrenaline, plays a definite part in carbohydrate metabolism, and considerable evidence has recently been obtained which suggests that the adrenal cortex plays an even more important part. On injection of adrenaline in normal animals hyperglycæmia results,[15] and the degree of hyperglycæmia is roughly proportional to the dose.[36] This hyperglycæmia is associated with a depletion of liver-glycogen, and in hepatectomised animals adrenaline does not raise the blood-sugar.[91] From these facts it is concluded that adrenaline produces hyperglycæmia by mobilising liver-glycogen. When the blood-sugar is depressed by insulin, adrenaline is liberated,[19] and after hypoglycæmia the amount of glycogen in the liver is reduced.[24] It therefore appears that in the emergency of hypoglycæmia adrenaline plays an important part in the return of the blood-sugar to normal levels. Besides its central action in the liver adrenaline influences the abstraction of sugar from the blood by the peripheral tissues. Cori [24] is of the opinion that adrenaline diminishes the peripheral utilisation of sugar, but by direct experiment Soskin et al.[124] have shown that the peripheral utilisation of sugar is not decreased, and recently evidence has been obtained which indicates that adrenaline increases the amount of sugar removed in the periphery.[70]

The rôle of the adrenal cortex in carbohydrate metabolism is still controversial. In the crises of Addison's disease and in the terminal days of survival of adrenalectomised animals hypoglycæmia develops [77 110] and the glycogen stored in liver and muscles falls to low levels.[16] There appears to be some relationship between the adrenal cortex and the hypophysis. Viale [135] reported that pancreatic diabetes in the dog was ameliorated after adrenalectomy, and Houssay and Biasotti [75] obtained the same results in toads. Gondard [49] and Lewis and Turcatti [84] could not confirm this. Using depancreatised cats, however, Long and Lukens [86] have consistently found that after removal of the adrenal glands the survival time of these animals is prolonged almost to the same extent as after hypophysectomy. A similar disagreement exists about the effect of extracts of the anterior-pituitary gland on adrenalectomised animals. Houssay [73] and his colleagues state that adrenalectomy does not reduce the hyperglycæmia previously produced by such extracts in dogs, and that implantation of the pituitary gland into adrenalectomised toads still causes hyperglycæmia. McNair Scott and I have found that the glycotropic factor of the hypophysis is still active in adrenalectomised rabbits.[69] On the other hand, Long [85] finds that in adrenalectomised and partially depancreatised rats extracts of the anterior-pituitary gland are without effect. It is possible that these discrepancies may be explained as due to the differing reactions of different species of animals or possibly by differences in the extracts used.

THYROID GLAND

Glycosuria occasionally develops in thyrotoxicosis, and in such cases sugar tolerance is also impaired. When the basal metabolic rate is reduced, either by administration of iodine or by thyroidectomy, the glycosuria diminishes or disappears and the sugar tolerance returns towards normal. Griffiths [52] reports that in cases of Graves's disease a high-grade insulin insensitivity, as judged by the insulin-glucose test, may be found, and that such insensitivity is diminished by thyroidectomy. After administration of large amounts of thyroid gland to rabbits the liver-glycogen practically disappears [28] and coincidentally the metabolic rate and the urinary excretion of nitrogen rise. Usually the sugar tolerance in such animals is little impaired.[97] After thyroidectomy the return of the blood-sugar from hypoglycæmic levels to normal is said to be slow. Although it is possible that the secretion of the thyroid gland acts directly on the liver, such an assumption is not necessary. An alternative explanation of the events after administration of thyroid extract would be as follows. Thyroid extract raises the metabolic rate of the tissues and thus increases their demand for sugar. The liver attempts to meet this demand first by liberation of glucose from glycogen and secondarily by increasing the rate of new formation of sugar from protein. Such metabolic activity on the part of the liver can be produced by injection of extracts of the anterior-pituitary gland. If the increased demand of the tissues for sugar in thyrotoxicosis causes the anterior-pituitary gland to secrete in excess the factor concerned in carbohydrate metabolism, the increased activity of the liver and the associated insulin insensitivity would be explained. In this connexion the relative frequency with which diabetes develops in persons who have, or who have had, thyrotoxicosis [78] may be remembered when the production of permanent diabetes mellitus by administration of extracts of the anterior-pituitary gland is discussed.

(*To be continued*)

PARENTERAL THERAPY WITH M. & B. 693 SOLUBLE

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THE use of M. & B. 693 has materially reduced the case-mortality in pneumonia during the fifteen months since its introduction (Evans and Gaisford 1938, Anderson and Dowdeswell 1939, Agranat, Dreosti, and Ordman 1939, Flippin, Lockwood, Pepper, and Schwartz 1939, Graham, Warner, Dauphinee, and Dickson 1939, Meakins and Hanson 1939). This drug is still proving to be one of the least toxic of the sulphanilamide group, and no serious complications have followed its administration in more than a thousand cases at Dudley Road Hospital.

The chief drawback is its liability to cause vomiting in some cases; though this seldom happens in infants and young children, in adults it may be a prominent feature. The cause of the vomiting is not yet clearly understood; it may be of central origin or due to gastritis. That gastritis plays some part in the process is suggested by the absence of vomiting in children, who are less subject than adults to gastritis. Although the vomiting can be minimised by varying the mode of administration and dosage, so that it is seldom that insufficient drug is retained to produce the desired concentration in the blood, occasionally patients are encountered, especially the very ill ones, who are unable to swallow the tablets even when finely crushed and suspended. This may be due to the general condition—e.g., delirium—or to the state of the mouth. In such cases parenteral administration becomes imperative. In overwhelming or mass infections it may also be desirable to supplement the oral route with parenteral therapy. It is particularly valuable in treating pneumococcal meningitis.

From the earliest days of research on the anti-pneumococcal properties of 2-sulphanilyl-aminopyridine attention has been devoted to the possibility of producing a soluble form of the drug. All substances examined have been rejected for a variety of reasons—e.g., toxicity or lower therapeutic activity—with the possible exception of the sodium salt. This, however, while possessing antipneumococcal properties had the serious drawback of being highly alkaline. To overcome this difficulty an oily suspension (0·5 g. in 2·5 c.cm.) of M. & B. 693 was prepared and widely used but did not prove altogether successful, because of the limited number of injections possible and the low concentration of the drug obtainable in the blood. Owing to this unsatisfactory outcome attention was redirected to the possible clinical use of the sodium salt, which was first tried in a 25 per cent. solution given intramuscularly (0·5 g. in 2 c.cm. solvent) and subsequently in a concentration of 33⅓ per cent. (1 g. in 3 c.cm.). In the latter form it has been administered to many patients, and this communication presents our findings to date. For the most part injections of 3 c.cm. have been given every three or four hours intramuscularly, but in a few cases the intravenous route has been employed, the solution being made up to 10 c.cm. with distilled water; however, the latter method led to vomiting and was followed by rigors in some cases. The substitution of normal saline for distilled water as a diluent prevented the rigors; but, in view of the fact that intramuscular injection did not cause any such unpleasantness and was rarely followed by vomiting, it appears to be the method of choice for parenteral administration. Despite the high alkalinity no untoward effects have followed the injections, and these have not been unduly painful. Absorption and excretion are both rapid. The effect on children has also been investigated, the doses employed varying from 0·15 to 1·0 g. according to age, no ill effects being observed.

Various pneumococcal infections have been treated successfully, but no attempt has been made to present the results in statistical form, since it was the therapeutic method that was being studied. Specimen protocols are attached.

INVESTIGATIONS UNDERTAKEN

At intervals after injection specimens of blood were taken and the concentration of M. & B. 693 was estimated. Urine was similarly examined and, in four cases, vomitus and, in two cases, breast-milk. The number of investigations on each patient was determined by the degree of illness and by the hour of the day (or night), but samples of blood were taken to enable graphs to be plotted showing the concentration of the drug in the blood at approximately 15-minute intervals throughout the 4-hour periods. Thus, one patient had samples withdrawn at ½, 1, 1½, 2, 2½, 3, 3½, and 4 hours, another comparable one at ¼, ¾, 1¼, 1¾, 2¼, and so on, another at 5, 35, 65 minutes, and so on, for it was impracticable to collect samples of blood very frequently from the same patient. A curve showing the average concentration of M. & B. 693 in the blood of patients given intramuscular injections of 1 g. of the sodium salt every four hours is shown in fig. 1. It can be seen that an average concentration of 4 mg. per 100 c.cm. is obtained after the fourth injection.

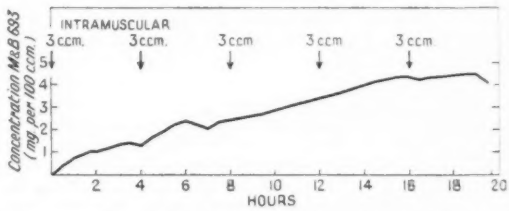

FIG. 1—Concentration of M. & B. 693 in blood of patients given 1 g. of M. & B. 693 soluble intramuscularly four-hourly.

Similarly, fig. 2 shows the average concentration of M. & B. 693 in the blood after intravenous injection of 1 g. every four hours. By this method a concentration of approximately 4 mg. per 100 c.cm. is obtained within half an hour. The level then falls rapidly but rises again with subsequent injections.

In most cases, after initial doses of the sodium salt parenterally, 1 g. of M. & B. 693 was given orally four-hourly, and curves were obtained showing the maintenance of blood level by this means. In fig. 3 is shown the typical curve for a child (case 4) who received one intramuscular injection of 0·15 g. and

four of 0·3 g. of the sodium salt at four-hourly intervals. A concentration of about 4 mg. per 100 c.cm. was reached after the fourth injection. Fig. 4 is a curve showing the maintenance of the blood level by oral administration after several intramuscular injections had been given.

The blood levels varied within such wide limits in individual cases that it is impossible to present more

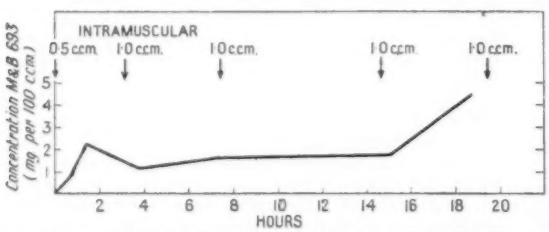

FIG. 3—Concentration of M. & B. 693 in blood of child given one intramuscular injection of 0·15 g. M. & B. 693 soluble and four of 0·3 g. at four-hourly intervals.

than average curves, but the investigations carried out show that the administration of M. & B. 693 soluble is a perfectly justifiable procedure.

COMPLICATIONS

Three children developed small punched-out oval ulcers about ¼ in. deep over the site of an injection, which had been given subcutaneously. Culture of the pus showed *Staphylococcus aureus* in one, and the other two were sterile. That such a complication might occur is not surprising in view of the high pH and from animal experiments, but it has only happened in injections given subcutaneously in error, and these were in young children in whom intramuscular injection was difficult. It would appear, however, that the risk is slight, provided that the injections are given sufficiently deeply into the gluteal muscles, and that no drug is allowed to contaminate the needle-track. Further, it will seldom be found necessary to give more than four parenteral doses before oral therapy is initiated or resumed, owing to clinical improvement in the patient. Actually over 200 injections have been given without mishap.

CLINICAL DETAILS

CASE 1.—A boy, aged 8, with right lower lobar pneumonia, admitted on the second day of illness,

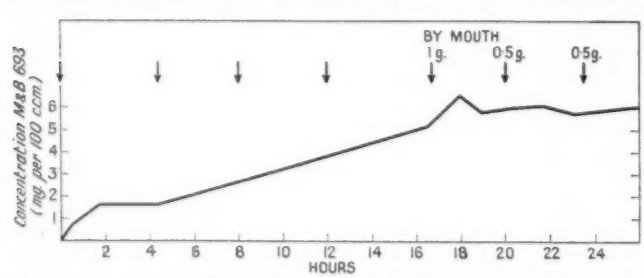

FIG. 4—Maintenance of blood level of M. & B. 693 by oral administration after four intramuscular injections.

received five intramuscular injections of 0·3 g. of M. &. B. 693 soluble at four-hourly intervals. One hour after the fifth dose the concentration of the drug in the blood was 4·8 mg. per 100 c.cm. The temperature fell in twenty-four hours after starting the treatment. Cured.

CASE 2.—A male infant, aged 11 months, admitted on the third day of bronchopneumonia, received four intramuscular injections of 0·15 g. at four-hourly intervals. The temperature fell in twenty-four hours. Cured.

CASE 3.—A male infant, aged 16 months, admitted with extensive bronchopneumonia on the third day of illness, received five intramuscular injections of 1 c.cm. of the 25 per cent. solution of the sodium salt at four-hourly intervals. The temperature fell in twenty-four hours. Cured.

CASE 4.—A boy, aged 6, admitted on the fourth day of a right lower lobar pneumonia, was given 0·15 g. of the sodium salt immediately and 0·3 g. every four hours for four injections by the intramuscular route. An hour and a half after the first injection the concentration of the drug was 2·2 mg. per 100 c.cm. of blood; at the time of the last injection it was 4·4 mg. per 100 c.cm. The temperature fell in thirty-six hours. Cured.

CASE 5.—A youth, aged 16, with left lower lobar pneumonia, admitted on the fourth day of illness, received two injections of 1 g. intravenously followed by 1 g. every four hours by mouth for five doses. A concentration in the blood of 1·8 mg. per 100 c.cm. was reached an hour after the first injection. The temperature fell in fifty-six hours. Cured.

CASE 6.—A man, aged 25, with left lower lobar pneumonia, pneumococcus types XII and XIV being isolated, admitted on the fourth day of illness, was given five intramuscular injections of 1 g. at four-hourly intervals. Cured.

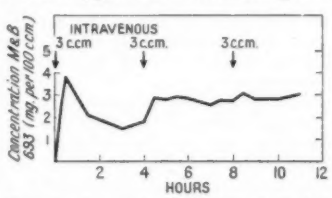

FIG. 2—Concentration of M. & B. 693 in blood of patients given 1 g. of M. & B. 693 soluble intravenously four-hourly.

CASE 7.—A man, aged 29, admitted on the third day of a right lower lobar pneumonia due to pneumococcus type I, received four intramuscular injections of 1 g. of M. & B. 693 soluble at four-hourly intervals. Cured.

CASE 8.—A woman, aged 30, with left lower lobar pneumonia, admitted on the fifth day of illness. Pneumococcus type VII was isolated. Two intravenous injections of 1 g. were given at four hours' interval, followed by 1 g. of M. & B. 693 orally every four hours for five doses. The patient was lactating, and two samples of breast-milk were examined for their content of M. & B. 693. Immediately after the second intravenous injection of the sodium salt the left and right breast-milk contained 2·5 mg. of the drug per 100 c.cm. The concentration in the milk from the left breast rose to 3 mg. per 100 c.cm. before the oral administration of the drug was started. An hour and a half after the fourth oral administration the concentration of the drug in the left breast-milk was 2·0 mg. and in the right breast-milk 2·5 mg. per 100 c.cm. The blood level half an hour after the second intravenous administration was 4·3 mg. per 100 c.cm. but reached 6·0 mg. per 100 c.cm. twenty-five hours after the last oral dose. The temperature fell within twenty-four hours after the institution of treatment. Cured.

CASE 9.—A woman, aged 76, very ill on admission on the third day of a right middle lobar pneumonia, was given 1 g. of M. & B. 693 soluble intramuscularly every four hours for seven injections. A concentration of 5·3 mg. per 100 c.cm. in the blood was attained

one and three-quarter hours after the fourth injection. The temperature fell in twenty-four hours. Cured.

CASE 10.—A woman, aged 35, admitted, extremely ill, on the sixth day of illness with both lower lobes consolidated, received seven intramuscular injections of 1 g. at four-hourly intervals, followed by 1 g. by mouth every four hours. The temperature remained irregular for ten days and then fell. Cured.

CASE 11.—A woman, aged 28, admitted on the fifth day of a right lower lobar pneumonia due to pneumococcus type III, was given M. & B. 693 2 g. by mouth every four hours for four doses. An hour after the last dose the concentration of the drug in the blood was 3·4 mg. per 100 c.cm. An intramuscular injection of 1 g. of the sodium salt was then given, followed by another injection of the same amount after four hours, with two further injections at six-hourly intervals. The concentration of the drug in the blood one and three-quarter hours after the first injection was 7·3 mg. per 100 c.cm. The patient vomited five hours after the second intramuscular injection. The concentration of M. & B. 693 in the vomitus was 30 mg. per 100 c.cm. The temperature fell within forty-eight hours after the start of treatment. Cured.

CASE 12.—A youth, aged 16, with left lower lobar pneumonia of indefinite onset due to pneumococcus type XXIV. There was also a tuberculous cavity at the left apex, and the sputum was positive for tubercle bacilli. The patient received two intramuscular injections of 1 g. at four hours' interval. The temperature fell within forty-eight hours. Cure of the pneumonia.

CASE 13.—A woman, aged 46, admitted on the fourth day of a left lower lobar pneumonia, received two intravenous injections of 1 g. at four hours' interval. A blood concentration of 1·6 mg. per 100 c.cm. was reached seventeen minutes after the first injection. The temperature fell within twenty-four hours. Cured.

CASE 14.—A woman, aged 44, with bronchopneumonia, admitted on the fourth day of illness, received seven injections of 1 g. of the sodium salt intramuscularly at four-hourly intervals. Three hours after the last injection a concentration of 5·9 mg. of M. & B. 693 per 100 c.cm. was found in the blood. Eight hours after the injection the level was 4·7 and twenty-one hours later 3·3 mg. per 100 c.cm. The temperature fell within twenty-four hours. Cured.

CASE 15.—A man, aged 35, admitted on the second day of bronchopneumonia, was given M. & B. 693 soluble intramuscularly in doses of 1 g. every four hours for four injections, followed by M. & B. 693 1 g. and then 0·5 g. every four hours by mouth. At the start of the oral administration the concentration of M. & B. 693 in the blood was 5·1 mg. per 100 c.cm. The temperature fell within twenty-four hours. Cured.

CASE 16.—A youth, aged 16, admitted with "influenza" which had been present for four days, was given intramuscular injections of 1 g. at four-hourly intervals. About two to four hours after the third injection he vomited, and the M. & B. 693 content of the vomitus was very high—180 mg. per 100 c.cm. The patient's temperature fell within twenty-four hours of the start of treatment. Cured.

CASE 17.—A very frail senile man, aged 71, with pneumonia affecting the right lower lobe, admitted in a grave toxic state on the third day of illness, was given four intramuscular injections of 1 g. at four-hourly intervals. He died after three days, though the temperature fell within twenty-four hours of admission. No post-mortem examination was made.

CASE 18.—A woman, aged 56, with chronic bronchitis and emphysema, admitted with an acute attack of bronchitis of four days' duration, received intramuscular injections of 1 g. of M. & B. 693 soluble at four-hourly intervals for five doses, followed by 1 g. of M. & B. 693 orally. A concentration of 6·4 mg. of M. & B. 693 per 100 c.cm. in the blood was reached two hours after the fifth injection. The temperature fell within twenty-four hours. Cured.

CASE 19.—A man, aged 35, with right upper lobar pneumonia, admitted on the third day of illness. Pneumococcus type I was isolated. Five intramuscular injections of 1 g. of the sodium salt were given at four-hourly intervals, followed by 1 g. of M. & B. 693 by mouth. The concentration of M. & B. 693 in the blood two hours after the first administration was 7·5 mg. per 100 c.cm. and rose to 10·3 mg. per 100 c.cm. two and a half hours after the last injection. The temperature fell within twenty-four hours. Cured.

CASE 20.—A youth, aged 16, with acute rheumatic fever, received four injections of 1 g. intravenously at four-hourly intervals. The concentration of M. & B. 693 in the blood half an hour after the first injection was 11·0 mg. per 100 c.cm., but after another hour this had fallen to 2·1 mg. per 100 c.cm., rising to 3·6 mg. per 100 c.cm. after the second injection. The patient vomited about two and a half hours after the second injection, the concentration of M. & B. 693 in the vomitus being 4·0 mg. per 100 c.cm.

CASE 21.—A female infant, aged 1 year, with migratory right upper lobar pneumonia, was given five intramuscular injections of 0·15 g. at four-hourly intervals. The temperature fell, but it rose again a few days later, when a fresh area of consolidation appeared. This second rise in temperature was controlled by M. & B. 693 by mouth. A concentration of 7·2 mg. of M. & B. 693 per 100 c.cm. of blood was obtained one and a half hours after the third injection. Cured.

CASE 22.—A man, aged 52, admitted on the seventh day of a mild bronchopneumonia, was given four intramuscular injections of 1 g. at four-hourly intervals. The temperature fell within twenty-four hours. Cured.

CASE 23.—A man, aged 38, with left lower lobar pneumonia due to pneumococcus type I, admitted on the fourth day of illness, received two intravenous injections of 1 g. at four hours' interval. A concentration of 3·6 mg. per 100 c.cm. was obtained one and a half hours after the first injection. The temperature fell within forty-eight hours. A clear sterile effusion subsequently developed, but was spontaneously absorbed. Cured.

CASE 24.—A man, aged 71, admitted on the third day of a type I right lower lobar pneumonia, was given two intravenous injections of 0·5 g. of M. & B. 693 soluble at four hours' interval, followed by 1 g. of M. & B. 693 every four hours by mouth. An hour after the last injection the blood level of M. & B. 693 was 1·2 mg. per 100 c.cm. A rigor occurred an hour after the second injection, when the blood level was about 1·5 mg. per 100 c.cm. This patient developed a type I empyema but subsequently recovered.

CASE 25.—A woman, aged 50, with well-marked bronchopneumonia of indefinite onset, who was very ill on admission. Type IX pneumococci were isolated from the sputum. The dosage of the sodium salt was 1 g. intramuscularly every four hours, three injections being given. Cured.

CASE 26.—A man, aged 64, admitted on the second day of "influenza," received two intramuscular injections of 1 g. at four hours' interval. The temperature fell within forty-eight hours. Cured.

CASE 27.—A man, aged 25, admitted on the fourth day of a left lower lobar pneumonia. Pneumococcus type XII was isolated. Intramuscular injections of 1 g. of M. & B. 693 soluble were given four-hourly for five doses, followed by 1 g. of M. & B. 693 every four hours by mouth. A concentration of 3·5 mg. per 100 c.cm. was reached after the administration of the last dose. Four hours after the last injection the patient vomited. The vomitus contained 2·4 mg. of the drug per 100 c.cm. The temperature fell after four days. Cured.

CASE 28.—A man, aged 29, admitted on the third day of a right lower lobar pneumonia due to pneumococcus type I, received four intramuscular injections of 1 g. at four-hourly intervals. The temperature fell within twenty-four hours. Cured.

CASE 29.—A male infant, aged 1 year, admitted, very ill, on the seventh day of meningitis due to *Hæmophilus influenzæ*, was given six intramuscular injections of 0·15 g. at four-hourly intervals. A concentration of 5 mg. per 100 c.cm. of blood was reached one and a half hours after the third injection. Died. Post-mortem examination: the child was a mongoloid; bilateral submaxillary abscesses containing *Staphylococcus aureus* were found. There was some pulmonary collapse and pleurisy (*H. influenzæ* and pneumococcus type III). Cultures of material from the middle ears also showed *H. influenzæ* and pneumococcus type III. Pus from the meninges grew *H. influenzæ*.

CASE 30.—A male infant, aged 7 months, very ill on admission with severe bronchopneumonia, was first treated with M. & B. 693 by mouth, 0·25 g. every four hours for five days, followed by 0·25 g. thrice daily for twenty-one days. Six intramuscular injections of 0·15 g. were then given at four-hourly intervals. The blood level was 6·7 mg. per 100 c.cm. five and a half hours after the last dose; after a further five and a half hours it had fallen to 4·4 mg. per 100 c.cm., and twenty-nine and a half hours after the dose the level was 2·0 mg. per 100 c.cm. Cured.

CASE 31.—A girl, aged 4, very ill with bronchopneumonia and pertussis, was given eight intramuscular injections of 0·3 g. and one of 0·6 g. at four-hourly intervals. Two hours after a dose of 0·3 g. the concentration of M. & B. 693 in the blood was 3·6 mg. per 100 c.cm. Five and three-quarter hours after an intramuscular injection of 0·6 g. the blood level was 5·0 mg. per 100 c.cm. Died. At post-mortem examination both lungs were found to be solid all over, with confluent bronchopneumonia.

CASE 32.—A male infant, aged 7 months, very ill with bronchopneumonia and pertussis, received twelve intramuscular injections of 0·15 g. at six-hourly intervals. Four and a half hours after the last dose the blood level was 5·2 mg. per 100 c.cm. Died. At post-mortem examination severe bronchopneumonia was found, affecting both lower lobes. The hilar glands were enlarged. Pneumococci were found in both middle ears.

CASE 33.—A girl, aged 6, very ill with bronchopneumonia and pertussis, was given five intramuscular injections of 0·6 g. at six-hourly intervals. One and a quarter hours after the last injection the blood level was 12·3 mg. per 100 c.cm.; forty-seven and a half hours later it had fallen to 0·2 mg. per 100 c.cm. Died. No post-mortem examination was made.

In four of the cases (11, 16, 20, and 27), in which vomiting took place, the concentration of the drug in the vomitus was estimated. The values found were 30 mg., 180 mg., 4 mg., and 2·4 mg. per 100 c.cm.

CONCLUSIONS

The occasional need for a parenteral form of administration of M. & B. 693 is undoubted, and the sodium salt in a 33⅓ per cent. solution (1 g. in 3 c.cm.) is an adequate preparation. Clinically it is no more toxic than M. & B. 693, is not unduly painful after injection, is rapidly absorbed and excreted, and is less likely to cause vomiting than M. & B. 693 given orally.

In our experience intramuscular is preferable to intravenous injection, being easier for general use and less liable to cause reaction and vomiting, and giving an equally satisfactory concentration in the blood. It is essential that the injection be given *intramuscularly* and not subcutaneously, or non-absorption and local necrosis may take place. Although comparatively few patients have been treated so far, the results of this preliminary clinical trial appear to justify its use in selected cases, either where there is a mass infection or in which M. & B. 693 causes persistent vomiting. It is not intended to replace the oral preparation. A satisfactory scheme is to give four to six injections of 3 c.cm. at four-hourly intervals. These may be followed by smaller doses of M. & B. 693 orally—e.g., 1 g. four-hourly till the temperature falls. Such a system is less likely to cause continued vomiting in susceptible patients than the large initial dosage in general use at present. The drug may safely be given to children and babies in appropriately reduced dosage.

We are indebted to Dr. T. M. Anderson, deputy medical superintendent, for permission to publish these cases; to our colleagues for their collaboration; and to Dr. W. R. Thrower for his help throughout the investigation. We are also indebted to Miss G. Phillips for technical assistance in the biochemical estimations. We have great pleasure in acknowledging the courtesy of Messrs. May and Baker Ltd., who provided us with supplies of the sodium salt.

Since this paper was prepared we have seen the article by E. K. Marshall and P. H. Long (*J. Amer. med. Ass.* **112**, 1671) in which they state that the intravenous is the only satisfactory method of giving the sodium salt. This is at variance with our conclusions. Further experience may show that both methods will have their place in therapeutics.

REFERENCES

Agranat, A. L., Dreosti, A. O., and Ordman, D. (1939) *Lancet*, **1**, 309, 380.
Anderson, T. F., and Dowdeswell, R. M. (1939) *Ibid*, p. 252.
Evans, G. M., and Gaisford, W. F. (1938) *Ibid*, **2**, 14.
Flippin, H. F., Lockwood, J. S., Pepper, D. S., and Schwartz, L. (1939) *J. Amer. med. Ass.* **112**, 529.
Graham, D., Warner, W. P., Dauphinee, J. A., and Dickson, R. C. (1939) *Canad. med. Ass. J.* **40**, 325.
Meakins, J. C., and Hanson, F. R. (1939) *Ibid*, p. 333.

PNEUMONIA COMPLICATING HÆMATEMESIS

TREATED WITH M. & B. SOLUBLE

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E. LEATHER, M.B. Lpool
HOUSE-PHYSICIAN AT THE HOSPITAL

THIS note reports a difficult clinical problem solved by the administration of the soluble sodium salt of M. & B. 693 ("Dagenan sodium").

A man of 40 was admitted to the Liverpool Royal Infirmary with the history that on three occasions during the previous four days he had vomited a good deal of blood, following "a big feed of meat pies." For some time, and especially for the past six months, he had had pain after food and "indigestion"; but he had not bothered much about it, nor had he seen fit to consult a doctor. Nine years ago he had been in the same hospital with right-sided lobar pneumonia.

It was only with difficulty that his own doctor persuaded him to go into hospital, in spite of the repeated vomitings of blood; but he was in poor condition on admission and thought he was going to die. He was very pale and markedly dehydrated, and his blood hæmoglobin, taken after his last hæmorrhage when the secondary dilution of his blood cannot have been complete, was only 40 per cent.

With blood transfusions, and large amounts of glucose-salines given intravenously, he rallied reasonably well, despite further vomiting of a small amount of blood. The second day after admission, however, there was a sudden rise of temperature from the subnormal up to 101° F., and the respirations were 40 per minute. He had developed a little grunting cough, and complained of pain in the left side of the chest. Clinical examination made it clear that there must be a centrally placed patch of pneumonia in the left lung, and this was confirmed by the results of immediate radiography of the chest with a portable machine, and the coughing up of small quantities of sticky "rusty" sputum, infected with a mixed growth

of organisms. Unfortunately, owing to an error, the pneumococci present were not typed. Later the physical signs and X-ray appearances revealed a consolidation of the whole of the left upper lobe.

The patient was now delirious, and the outlook seemed desperate. Because of the hæmatemeses, the oral administration of drugs, and especially of tablets of M. & B. 693, was contra-indicated; for any recurrence of the vomiting or bleeding might be dangerous. Happily we had by us a supply (through the courtesy of May and Baker Ltd.) of the soluble salt; and the intramuscular injection of 3 c.cm. of this was started as soon as the clinical diagnosis was made and was continued every four hours.

During that night he was gravely ill, but next day his temperature had fallen to normal and he was much better. He still needed much fluid; was he to have it intravenously or by mouth? We decided on the latter. Over the following two days he made steady improvement, and as he was finding the intramuscular injection of the drug very painful—it is quite alkaline in reaction—it was discontinued. The following day the temperature rose to 100° F. and the drug was injected again every six hours until the temperature was normal again the next day. Since then he has made a steady uneventful recovery, with resolution of the pneumonia, confirmed by X ray. He is now so far improved in his general condition as to be ready for gastro-intestinal radiography.

Anyone faced with an emergency such as this must take action on clinical grounds. It seemed clear that the hæmatemeses were due to bleeding from a peptic ulcer, and that it was therefore dangerous to treat a complicating pneumonia with tablets of the ordinary M. & B. 693. It was comforting to have available the soluble salt for parenteral injection. The onset of pneumonia in a patient already gravely ill seemed to make the prognosis quite hopeless, and it was surprising and very pleasing to find that after all he did recover. We have deliberately reported the case as it stands, for whether further investigations now confirm the presence of a peptic ulcer or not, they would not alter the clinical problem which had to be dealt with in those first few days after admission of the patient to hospital.

PNEUMOCOCCAL MENINGITIS

A REVIEW OF 39 FATAL CASES AND A REPORT OF RECOVERY AFTER ADMINISTRATION OF M. & B. SOLUBLE

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PNEUMOCOCCAL meningitis is rare. During the past three years 36,848 patients have been admitted to the general wards of the Dudley Road Hospital and only 39 of these were suffering from it. There is no selection of cases at this hospital and no ill patient is refused admission. The rarity of the condition is, however, offset by its fatality-rate, which before the sulphonamide remedies were introduced was usually accepted as 100 per cent. Cases of spontaneous recovery have been reported in America (Allman 1937, Frankmann and Stewart 1937), but there is no record of such an outcome at the Dudley Road Hospital and all the 39 cases to which I have referred were fatal.

The age-groups of the 39 patients are shown in table I. It will be seen that 24 were under ten years of age and approximately two-thirds were under twenty. Males numbered 28.

Apart from its very high mortality, the disease is noteworthy for the speed with which it kills. No patient admitted with pneumococcal meningitis survived a week in hospital, and 26 of the 39 were dead within three days. The diagnosis was confirmed in all cases by lumbar puncture and bacteriological examinations or by autopsy. The post-mortem findings in the 19 cases examined are set out in table II. It will be seen that bronchopneumonia, lobar pneumonia and otitis media were the common accompaniments. In one case no other pathological lesion was present, while in another the only other lesion was pulmonary tuberculosis (pneumococci present in large numbers in the meningeal exudate). In the case with ulcerative endocarditis, pneumococci were found in large numbers on the vegetations on the aortic valve, but the lungs were normal. Of the 4 patients with bronchopneumonia 3 were under a year old while all the 4 cases with lobar pneumonia were over twenty. Of the 4 with otitis media alone 3 were infants, while those with both otitis media and bronchopneumonia were aged six months and six years respectively. These findings are what one would expect, since otitis media and bronchopneumonia are common in the young, while lobar pneumonia is the usual pneumococcal disease of adults.

TABLE I—CASES GROUPED ACCORDING TO AGE

Years—	Under 1	1–5	5–10	10–20	Over 20
Cases	9	7	7	3	13

TABLE II—OTHER PATHOLOGICAL CONDITIONS FOUND AT AUTOPSY

	Cases		Cases
Bronchopneumonia	4	Sinusitis (pneumococcal)	2
Bronchopneumonia and pneumococcal otitis media	2	Ulcerative endocarditis (pneumococcal)	1
Lobar pneumonia	4	Pulmonary tuberculosis	1
Otitis media (pneumococcal)	4	No other lesion found	1

A few cases of pneumococcal meningitis treated successfully with sulphanilamide and its derivatives have been reported, but the following is, I believe, the first reported successful case in which the new soluble sodium salt of 693 was used. The preparation is put up in ampoules containing 1 gramme of the salt dissolved in 3 c.cm. of fluid, and 1 g. injected is stated to be equivalent to 2 g. by mouth. It is essential to give the injection deeply into the muscle and not into the subcutaneous tissue, or an abscess may result. Estimations of the blood content of M. & B. 693 made at this hospital have shown that a high concentration can be quickly secured by intramuscular injection and maintained by four-hourly injections (see chart).

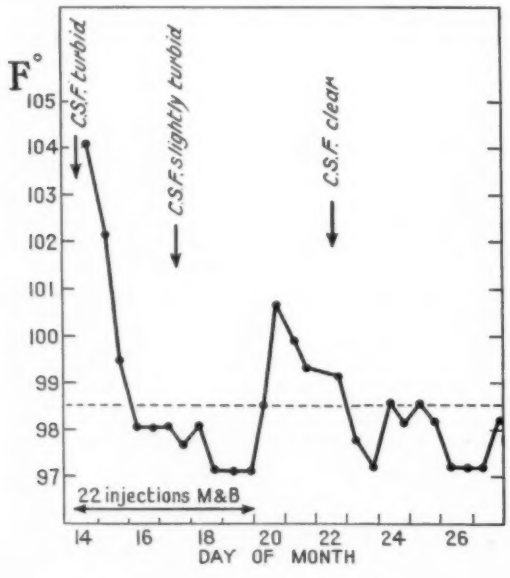
The patient was a girl of 7 admitted on the evening of April 14 with a history of vomiting and headache for three days. She was very ill, pale, and slightly sallow; temperature 104° F., pulse-rate 130, respirations 30. She was delirious and vomited continually, her neck was stiff, and Kernig's sign was positive. Ears normal. It was difficult to examine the chest because of the restless delirium, but no abnormal condition was found. Lumbar puncture: thin turbid fluid under pressure. Laboratory report on cerebrospinal fluid (C.S.F.): pus cells present pneumococci type X grown on culture.

Intramuscular injections of M. & B. soluble (1 c.cm. four-hourly) were started at once. Next day she was still delirious and vomiting, and required small

injections of morphine; but the temperature was falling. On the following day (April 16) it was normal, though there was no change in the general condition, and on the 17th she was still very ill with a threatening bedsore probably at the site of injection. Lumbar puncture produced a pale yellow fluid which looked almost clear but contained pus cells and yielded pneumococci on culture. By next day there was much less vomiting and the child was quieter, the temperature remaining down. On April 19 she vomited only once and showed interest in her surroundings. On the 20th, having now received a total of 22 injections of 1 c.cm., she was languid and weak, but there was no vomiting. On the other hand there was a slight rise in temperature.

On April 21 she was much better, asking for food and denying headache; no neck stiffness. M. & B. 693 by mouth was started, with 0·25 g. two-hourly. Next day she was vomiting again, though there was no headache or meningism. The C.S.F. was now a clear fluid (36 cells per c.mm., chiefly round cells); no organisms were seen in films and there was no growth on culture. The administration of M. & B. 693 by mouth was stopped because it was thought to be causing vomiting (total given 6·25 g.), and two intramuscular injections of M. & B. soluble, each of 3 c.cm., were given during the day. On April 23 the temperature was normal again, and after 0·5 g. of M. & B. 693 had been given by mouth in the morning no more was administered. On the 24th the child was well and very bright mentally. A small sterile abscess was present at the site of one of the injections, where apparently some of the solution was put into the subcutaneous fat. She has since remained well and seems in full health.

As spontaneous recoveries from this disease are on record it would be unwise to make considerable claims on the basis of a single case; but the temperature chart certainly shows rapid improvement after giving M. & B. soluble. The improvement in the child's general condition lagged behind the temperature fall by some two days; but this is what one might expect, for the meningeal exudate of pneumococcal meningitis is usually fairly copious and thick, and delirium, vomiting and meningism might continue until some of it had been absorbed. The second rise in temperature is probably attributable to the formation of the small aseptic abscess, the occurrence of which shows the need to give the injections deeply into the muscle.



I am indebted to Dr. T. M. Anderson, deputy medical superintendent of the hospital, for permission to publish these cases; to my colleagues for access to their case-records; and to Dr. William Whitelaw for the pathological findings. My thanks are due to Messrs. May and Baker Ltd., who supplied the drug.

REFERENCES

Allman, C. H. (1937) *Arch. Otolaryng., Chicago*, **25**, 653.
Frankmann, R. W., and Stewart, J. V. (1937) *Ohio St. med. J.* **33**, 1105.

LITHOTOMY-TRENDELENBURG POSITION

FOR RESECTION OF RECTUM AND LOWER PELVIC COLON

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EVERYONE is familiar with the lithotomy and Trendelenburg positions, but I wish to point out some of the merits of using a combination of these two positions when operating on the rectum and lower colon. I have used this method for the past eighteen months and have had time to assess its advantages and eliminate some of its faults.

The aim has been to simplify operations on the pelvic portion of the bowel by placing the patient in such a position that a whole choice of procedures are available without moving or turning the patient once the operation has begun; for it to be possible to work either from the abdomen or the perineum, or alternatively, if there are two operators, for synchronous operating to take place.

I have attained this end by using special supports which are designed to hold the patient comfortably and effectively in this position (fig. 1). They are adjustable so that a patient of any size can be accommodated and, in addition, are designed to put the perineal tissues on the stretch when dissecting in that area, whilst this tension can be diminished when sewing up the perineum. Although my approach to this subject has been an individual one, both Kirschner and Devine have developed methods on similar lines.

It will be seen in figs. 2 and 3 that the abdominal and perineal exposures are a compromise. The best perineal exposure is obtained when the patient's thighs are well flexed and the best exposure of the abdomen when the thighs are extended. Excision of the rectum from the perineum in the lithotomy position will be a new departure for some surgeons, the majority of whom probably use the established left lateral position. This approach is, however, no new one, for it was described by Mayo in 1910 and is now used by many surgeons. Apart from slightly increased trouble in removing the coccyx I think it has every advantage over the left lateral position, since the tissue planes are held more on tension and the left and right sides are exposed equally well.

Some considerable time has been given to developing the special props (supports) for the patient's legs to enable the ideal combined position to be obtained—i.e., the best exposure of both the abdomen and the perineum at the same time. As before mentioned, they are designed to fit any size of patient, the horizontal rod (H) and the vertical part (B) being extensible (see fig. 4). The props are set in the

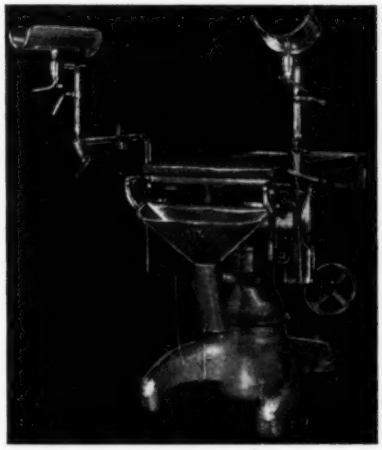

FIG. 1—Supports attached to the table.

ordinary lithotomy rod fixtures. Upright A is marked off in inches so that both rods can be readily fixed at the same height, and as a general rule it is found that the horizontal bar (H) should be about five inches above the level of the table. The upright (A) has one flattened surface to prevent the prop twisting round, and this flattened surface is cut in such a way that when fixed the horizontal part forms an angle with the edge of the table, giving a greater space between the two ball-and-socket joints (Y), thus enabling the operator and assistant to sit comfortably opposite the perineum. The upright (B) can be lengthened or shortened to accommodate any length of thigh and the ball-and-socket joint (X) allows for comfortable adjustment for the calf on the rest (W).

OPERATIVE PROCEDURE

The patient is placed in position after anæsthesia has been induced. The legs are placed in the props and the calf rests are well padded with a triple layer of gamgee size 15 in. by 12 in. quilted and enclosed in a muslin pillow-case with tapes for tying in position.

FIG. 2—View of patient from perineum with towels in place.

The various adjustments are made so that the best combined exposure of both the abdomen and the perineum is obtained. The shoulders are supported by extended shoulder rests which are again well padded and take the weight from the acromio-clavicular joints and across the back of the shoulders by means of a narrow pillow. The sacrum is lifted from the table by means of two sandbags. Sizes 15 in. by 5 in. and 15 in. by 12 in. have been found to be satisfactory, and are used as shown in fig. 5. The adjustment of the sandbags is important as their maximum lift should be at the greatest convexity of the sacrum—this will give a good exposure of the coccyx and also keep the pelvis in the best position. If the sandbags are placed too near the lumbar region the pelvis will tilt away from the abdominal operator, and if they are too far down exposure of the coccyx becomes difficult. For males, the penis and scrotum are kept out of the way by strapping them to the right thigh with adhesive tape. Lastly, it is advisable to adjust the table in the Trendelenburg position before putting on the sterile towels, so that any downward slip on the part of the patient can be noted and readjustment made to prevent it.

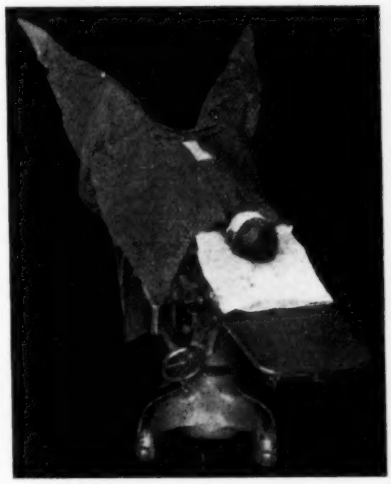

FIG. 3—View of patient from the abdomen with towels in place.

The arrangement of the patient soon becomes a simple matter which can be accomplished effectively in a few minutes. When this has been done and the towels applied, no further alteration in the patient's position is necessary unless the operation turns out to be a completely abdominal one. In this case by loosening the ball-and-socket joints X and Y on both sides the limbs can be extended and an almost full exposure of the abdomen obtained. With regard to towels, it should be noted that larger leggings than normal are required, and size 48 in. by 54 in. by 42 in. have been found to be satisfactory.

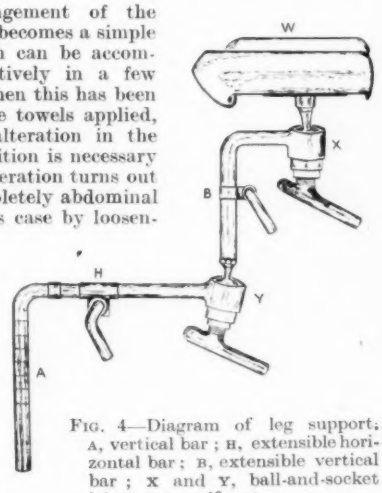

FIG. 4—Diagram of leg support; A, vertical bar; H, extensible horizontal bar; B, extensible vertical bar; X and Y, ball-and-socket joints; W, calf rest.

COMMENTS

The advantages of this method are considerable :—

(1) It allows a choice of procedures when the abdomen is opened and the growth is deemed operable. An abdomino-perineal or perineo-abdominal excision can be performed with equal facility, and for growths at or above the recto-sigmoid junction a

FIG. 5—Arrangement of sandbags.

Hartmann's or Paul's operation may be done. The position is also ideal for an abdomino-anal excision with anastomosis and conservation of the sphincter.

(2) The time spent on the essentials of the operation of necessity remains unaltered, but unnecessary waste of time is avoided in the combined excisions—abdomino-perineal and perineo-abdominal—because the patient does not need to be turned. This particularly applies to the perineo-abdominal operation in which there are two or three turns.

(3) Shock is reduced by the shortening of operating time and the avoidance of turning the patient.

(4) In abdomino-perineal operations the peritoneal floor can be closed over an empty pelvis.

(5) It is possible to operate from the abdomen and perineum at the same time. This requires two operators of experience and naturally results in considerable saving of time in straightforward cases. Synchronous operating however is most important in cases in which the growth is particularly adherent, and I think that further developments on these lines will undoubtedly result in an increased operability-rate. A number of these operations have now been done satisfactorily, and I propose to discuss this procedure more fully later.

There are no serious disadvantages. The position is admittedly a compromise, but for practical purposes an excellent exposure of both abdomen and perineum is in fact obtained. It must be realised that special supports are definitely necessary and attempts to use ordinary lithotomy crutches will lead to disappointment and will not give the method an adequate trial. The removal of the coccyx, as before mentioned, may be slightly more difficult than when operating in the left lateral position, as its exposure is not quite so good. This however is a minor point of little significance.

My thanks are due to Messrs. A. L. Hawkins and Co. of New Cavendish Street, London, the manufacturers of the supports, and also to Mr. H. R. Bussey and Mr. V. L. Hardwick for the illustrations.

INTERNATIONAL COURSE IN BALNEOLOGY.—An international postgraduate medical course in balneology is to be held in Budapest from Oct. 2 to 8. Among those who will deliver lectures are Prof. H. Vogt (Breslau), Prof. S. Gräff (Hamburg), Geh. San.-Rat P. Köhler (Bad Elster), Prof. A. Slauck (Aix-la-Chapelle), Prof. F. Coste (Paris), Prof. E. Wybauw (Brussels), Prof. E. Pisani (Montecatini), Prof. H. Salvesen (Oslo), Prof. Ö. N. Holsti (Helsinki), Dozent E. Folke Lindstedt (Stockholm) and Prof. M. Neskovic (Belgrade). Further information may be had from the Central Committee for Postgraduate Education in Hungary, Eszterházy-utca 9, Budapest VIII.

LEUCO-ERYTHROBLASTIC ANÆMIA RESEMBLING ACHOLURIC JAUNDICE

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A PORTER, aged 61, was sent to the Metropolitan Hospital from the outpatient department of another hospital, where several blood-counts had been done and lymphatic leukæmia diagnosed. He said that his illness started with an attack of "influenza" five months previously, since when he had lost weight and become progressively paler and yellower.

CLINICAL RECORD

He had had no serious illness previously and no jaundice; nor was there any history of jaundice among his relations.

On admission he was obviously anæmic with a distinct icteric tinge. Temperature, pulse, and respiration normal. The spleen was enlarged 1½ in. below the costal margin, and the liver was also slightly enlarged, ¾ in. below the costal margin. A small area of dullness was detected at the right apex behind.

A *blood-count* gave the following results :—

Red cells	1,350,000	Polymorphs	67 %
White cells	20,000	Lymphocytes	24 %
Hæmoglobin	36 %	Monocytes	3 %
Colour-index	1·33	Eosinophils	2 %
		Myelocytes and other immature forms	4 %

The white-cell count at first appeared to be 35,000 per c.mm., but, on examination of a stained blood-film, numerous nucleated red cells were seen. They numbered 75 per 100 white cells, and it was at once realised they had been included in the total white-cell count. (Nucleated red cells resist hæmolysis in acid distilled water, used for diluting and laking the blood, and appear in the hæmocytometer as small lymphocytes. They are also liable to be mistaken for lymphocytes when a non-laking stain, such as Toison's fluid, is used for diluting both the red and white cells together.) Therefore 75 out of the 175 cells in the hæmocytometer were nucleated red cells, and the true white-cell count was 35,000 minus 15,000 = 20,000 per c.mm. It was doubtless due to the non-recognition of this snag that the original wrong diagnosis of lymphatic leukæmia was made, though examination of a blood-film should have put the observer right.

The nucleated cells were normoblasts, early and late erythroblasts, and an occasional megaloblast. The erythrocytes showed considerable anisocytosis, punctate basophilia, and polychromasia, but poikilocytosis was not a feature. Eve's halometer reading was 4·4, which corresponds to a modal mean diameter of 7·81 μ. The anæmia was therefore macrocytic and hyperchromic. Reticulocytes reached the high figure of 45 per cent.

Van den Bergh reaction.—Direct reaction negative. Indirect reaction positive: bilirubin 2·5 mg. per 100 c.cm. (5 units).

Diagnosis.—On these findings a provisional diagnosis of pernicious anæmia was made and treatment with liver and iron started. True, a leucocytosis of 20,000 per c.mm. was against pernicious anæmia, but occasionally cases of this disease are met with, especially when there is a septic focus when the more usual leucopenia is replaced by a leucocytosis. For confirmation a fractional test-meal was done. This, however, showed a normal acid curve.

The diagnosis of pernicious anæmia was therefore discarded and acholuric jaundice considered. A red-cell fragility test showed hæmolysis starting in 0·7 per cent. saline and complete in 0·45 per cent. saline. A normal control put up at the same time

showed the normal result—lysis starting in 0·45 per cent. and complete in 0·3 per cent. saline. Such an increase in the red-cell fragility, taken in conjunction with the clinical signs—namely, jaundice associated with a positive indirect and negative direct van den Bergh reaction, enlarged spleen, and slightly enlarged liver—appeared to clinch the diagnosis of acholuric jaundice. Further, the leucocytosis with a few immature white cells, the large number of nucleated red cells, the high colour-index, the high reticulocyte-count, and the absence of poikilocytosis were all in favour of this diagnosis. It might be objected that the red blood-cells were not the typical small globular cells found in this disease, but in a crisis " In adults particularly there may be a marked macrocytosis rather than the characteristic apparent microcytosis; this occurs especially when the count is low " (Whitby and Britton, 1937).

Course of illness.—A second blood-count, done eleven days after admission, showed a distinct worsening of the condition. The hæmoglobin had fallen to 26 per cent. and the red cells to 900,000 per c.mm. Colour-index 1·44. The nucleated red cells now exceeded the white cells in the proportion of 125 to 100. The false total white-cell count was 45,000 per c.mm. and the true count 45,000 minus 25,000 = 20,000 per c.mm.

A blood-transfusion (450 c.cm.) given at this stage had a striking effect. The hæmoglobin and red cells rose steadily, while the nucleated red cells and other abnormal forms fell rapidly. The patient's complexion changed from a lemon-yellow to a rosy pink. His weight increased slightly and his general condition steadily improved, so that in a few weeks he was allowed to get up. Liver and iron were still being given.

In the 11th week the red cells showed the same high degree of fragility as on admission, but the nucleated forms had now disappeared.

In the 20th week the reticulocyte count was 1·6 per cent. The accompanying chart shows the red cells about this period increasing at a greater rate than the hæmoglobin, so that the two curves cross. After this the colour-index remains less than unity. Stained films made about this time showed the red cells to be uniform in size and shape and rather small. There were no abnormal forms. Several halometer observations gave an average reading of 5, which corresponds to a modal mean diameter of 6·88 μ. The blood-picture had in fact changed from macrocytic and hyperchromic to microcytic and slightly hypochromic.

Revision of diagnosis.—At this stage the question of splenectomy was being considered, when the illness took a sudden and dramatic turn. Œdema of the right arm and upper part of the right chest set in. This focused attention on the small area of dullness which, on admission, had been noted at the apex of the right lung, and it was found to have increased both in extent and intensity. A radiogram showed a dense area of opacity in this zone. Besides this development, palpation of the right side of the neck revealed some slightly enlarged lymph-glands. Carcinoma of the lung, with lymphatic spread to the right arm and chest and to the cervical glands, had now to be considered. A cervical gland was removed, and section showed it to be infiltrated with carcinoma. The histological picture was peculiar, owing to the relatively large amount of clear or foamy cytoplasm, due to fatty degeneration, possessed by the anaplastic cancer cells. So again the diagnosis had to be altered. This time it was changed to primary carcinoma of the lung with leuco-erythroblastic anæmia.

This type of anæmia, when due to carcinoma, is always associated with secondary deposits in the bone-marrow, which is stimulated to turn out both white and red immature cells. Radiograms at this stage, however, failed to reveal any deposits. (They were found post mortem.)

Terminal phase.—Iron and liver were now stopped, but in spite of this and the spread of the cancer, the blood, curiously enough, continued to improve, and by the 25th week the red cells had reached the 5 million mark. A fragility test done at this stage showed lysis starting in 0·5 per cent. saline—a decided approach to normal. Thereafter, though his physical condition began to deteriorate, the patient developed a troublesome cough, his appetite failed, and he lost weight; his red cells and hæmoglobin dropped only slightly. A leucocytosis persisted throughout the illness. His temperature on the whole kept pretty steady, with only occasional rises to 99° or 100° F. Death took place in the 36th week after admission.

FINDINGS

Post-mortem.—Only those tissues and organs showing pathological changes are here described.

Lungs.—The whole of the upper lobe of the right lung was solid and so firmly adherent to the chest wall that it could not be removed without leaving portions behind. Microscopical section showed an anaplastic carcinoma which had arisen in an old tuberculous focus. A solid nodule, the size of a small walnut, was found in the upper lobe of the left lung. This at first was thought to be a secondary growth, but microscopical section proved it to be an active tuberculous focus. A *lymph-gland* removed from the bifurcation of the bronchi showed, on section, a combination of miliary tubercles and infiltration with secondary carcinoma, the cells of which were anaplastic and fatty like those found in the cervical lymph-gland.

The *liver* was enlarged and studded with secondary deposits. Microscopical section showed the carcinoma cells to be less anaplastic and less fatty than in the lung and lymph-glands. These were in solid columns with, here and there, incipient acinous formation. Free iron was present. The *spleen* was also enlarged (weight 12 oz); free iron was present in abundance. Both *adrenals* were enlarged, with secondary carcinomatous deposits. An *abdominal lymph-gland* proved to be infiltrated with growth. Here the carcinoma cells were of two types:

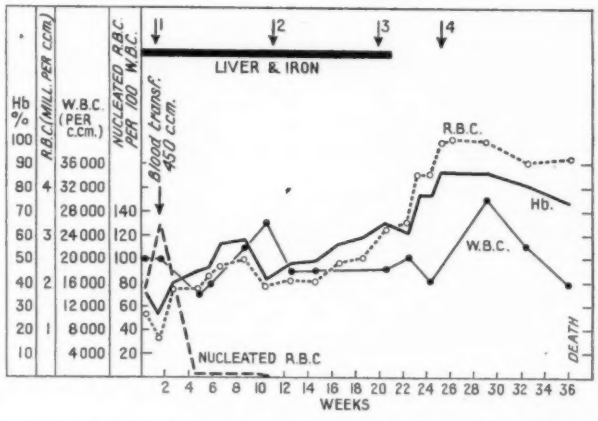


Chart of a case of leuco-erythroblastic anæmia resembling acholuric jaundice. Hb, hæmoglobin; R.B.C., red blood corpuscles; W.B.C., white blood corpuscles. Arrow 1: reticulocytes, 45 per cent.; hæmolysis in fragility test starts in 0·7 per cent. saline. Arrow 2: hæmolysis starts in 0·7 per cent. saline. Arrow 3: reticulocytes, 1·6 per cent. Arrow 4: hæmolysis starts in 0·5 per cent. saline.

the fatty anaplastic variety already described and deeper-staining cells in acinous formation.

Humerus.—The left humerus was removed and sawn through its whole length. The marrow was obviously hyperplastic throughout, of a deep red-purple colour containing a few small pale patches. A microscopical section of one of these pale patches showed large, fatty, and lightly stained carcinoma cells, identical with those found in the lung and lymph-glands.

Right axillary fold.—Since the tissues in this region were so much hardened and thickened, a microscopical section was made to determine if carcinomatous involvement of the lymphatics, as a direct spread from the lung adherent to the chest wall, had taken place. This was plainly shown to be the case, and was the cause of the solid œdema of the right arm and chest.

DISCUSSION

Icterus gravis in the newborn and acute hæmolytic anæmia at any age, may both show a slight increase in red-cell fragility; but I can find no reference to any disease, other than acholuric jaundice, in which a considerable increase in red-cell fragility is described. In acholuric jaundice it is the characteristic feature and commonly reaches 0·7 per cent. saline. The chief interest in this case of proved leuco-erythroblastic anæmia associated with carcinomatosis lies in the fact that it resembled acholuric jaundice so closely, even to the high degree of fragility of the red cells. Fragility tests done on two subsequent cases of leuco-erythroblastic anæmia, with carcinomatous deposits in the bones but no jaundice, gave normal results; but Vaughan and Harrison (1939) have found slightly increased red-cell fragility in two cases of leuco-erythroblastic anæmia associated with myelosclerosis. How far the associated tuberculosis affected the blood-picture in the case here described it is impossible to say. As for carcinoma of the lung starting in an old tuberculous focus, that is well known; but I have no knowledge that the reverse process has ever been described. It appears that in this case the implantation of the carcinoma on the site of the old tuberculous focus awakened its activity. The dense adhesion of the lung at this part to the chest wall was evidence of a lesion of long standing.

It is possible that some cases of so-called acquired acholuric jaundice may really be unrecognised cases of leuco-erythroblastic anæmia. At any rate this case shows the importance of excluding the latter disease by a thorough search of the body for a primary malignant growth and by radiography of the bones for secondary deposits, whenever a diagnosis of acholuric jaundice, largely based on increased red-cell fragility, is unsupported by a history of previous attacks of jaundice in either the patient or his relations. It was fortunate that this case revealed its true nature before splenectomy was performed.

My thanks are due to Dr. Norman Hill for permission to use the clinical notes of his patient.

REFERENCES

Vaughan, J. M., and Harrison, C. V. (1939) *J. Path. Bact.* March, p. 339.
Whitby, L. E. H., and Britton, C. J. C. (1937) Disorders of the Blood, London, p. 266.

MEDICAL SOCIETIES

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

AT the twenty-fifth annual conference of this association, held in Belfast from June 29 to July 1, with the Marchioness of TITCHFIELD, the president, in the chair, a discussion on the

General Administration of Tuberculosis Schemes

was opened by Alderman E. H. RICKARDS, J.P., who divided the administration of a tuberculosis scheme into four sections. (1) Discovery and diagnosis: there were, he thought, still too many people in whom the early stages of the disease remained undetected owing to the difficulty of persuading some people to submit to examination and owing to the lack of propaganda whereby general practitioners might be made acquainted with the existing facilities. (2) Treatment: there were few administrative difficulties here except insufficient accommodation to meet the long waiting-list of some authorities. (3) Isolation and prevention: much success had followed the use of shelters and separate sleeping accommodation, education in hygiene, and rehousing schemes. (4) Care and aftercare of the patient and his family: the funds of care committees could not rise to every type of assistance necessary, and difficulty was often met in the case of the young bread-winner discharged from sanatorium as fit for "light work," because light work was almost unobtainable. So far no serious effort had been made to find suitable work for these patients, and he suggested the setting up of workshops in connexion with a sanatorium at which discharged patients could be profitably employed for regulated hours.

Dr. ANDREW TRIMBLE said that any such scheme must concern itself both with the care and cure of the patient and with the prevention of a further spread of the disease, for the decline in mortality was due more to the limitation of infection than to cures. He outlined the development and progress of anti-tuberculosis measures in Belfast (where the death-rate had dropped by 67 per cent. from 1914 to 1938), put in a plea for a periodic review of any scheme, and suggested certain lines along which fresh endeavour might be directed, such as a study of the whole individual as a social unit, the cultivation of the health habit, and the training of school teachers in recognising suspicious signs of oncoming disease.

Dr. W. L. YELL looked upon the tuberculosis dispensary as the foundation of all schemes; hence the choice of a tuberculosis officer and nurse were of prime importance. He maintained that patients with early pulmonary, bone, or joint tuberculosis and those in an advanced stage of pulmonary disease should be given prior claim to institutional treatment, the intermediate group being best catered for by the colony system, which should be more generously subsidised. Dr. Yell then referred to the success of a small maternity unit at one of the Essex sanatoria to which patients are admitted six weeks before term and retained for three to six months after delivery. This, it was hoped, would banish many of the dangers attached to parturition in tuberculous women.

Dr. P. W. EDWARDS, in a paper on

Arrangements for Artificial Pneumothorax

said that, before an artificial pneumothorax was induced, the operators should make sure that there were adequate facilities for carrying on the treatment. These facilities he divided into "essential" and

"desirable." The former included an experienced physician, a thoracic surgeon, an X-ray equipment for screening and taking pictures, and a suction apparatus for trocar and cannula. The "desirable" facilities included a rapid gas-replacement apparatus, an operating-theatre for internal pneumolysis and phrenicectomy, and a quick method for sterilising needles in bulk.

Dr. B. R. CLARKE computed that 50 per cent. of all patients with open pulmonary tuberculosis required a pneumothorax. He regarded the induction as often a matter of urgency and deplored the lengthy wait for accommodation that was often encountered. He emphasised the need for experience in spacing refills and preferred frequent small refills controlled by screening. Since the main object of a pneumothorax was to bring about the lasting cure of the patient, the mental and physical reaction of the patient to the treatment should be constantly studied.

Dr. BRENDAN O'BRIEN considered the control of carriers to be the most important point in the prevention of tuberculosis, and this could be effected only by early diagnosis and adequate treatment. There was a tendency to use the artificial pneumothorax as a substitute for sanatorium treatment, whereas they should be complementary, and he was opposed to inducing a pneumothorax without a preliminary period of observation.

In the discussion that ensued Dr. GEORGE DAY hoped that tuberculosis officers and others with charge of pneumothorax patients would be provided with facilities for screening and radiography. This was not universal at the present time, with the result that the lung was either too much collapsed or there was a risk of the pneumothorax being lost.

On the second day, with Sir PERCIVAL HORTON-SMITH HARTLEY in the chair, Dr. GEORGE JESSEL, opening a discussion on

Tuberculosis in the Adolescent

said that the adolescent and young adult population had not participated in the continuous decline in the tuberculosis death-rate from 1901 to 1909, but that from 1933 onwards a steady fall had been noticed. After mentioning the possible predisposing factors that had been investigated by other workers, such as shortage of food, fatigue, work, and worry, he concluded that, apart from shortage of food, which the Registrar-General thought significant in explaining certain periods of arrested fall, no single factor was responsible. With regard to treatment the outlook had become more favourable, but treatment must be applied early. Rest was the most important item, and artificial pneumothorax was useful in suitable cases. On the preventive side the examination of contacts should be compulsory and universal. One examination was not enough; they should be kept under observation for at least five years.

Dr. F. S. HAWKINS cited the figures for Wales as showing the highest incidence of the disease to be in the adolescent age-group, and to account for this he invoked poor housing and poor food, the anxiety of finding a job, and the struggle to retain it. Certain symptoms should be regarded as danger signals, such as a constant succession of colds, aphonia, lassitude, a failure to gain weight, and amenorrhœa. Treatment should be prompt and prognosis guarded, especially in young women, and an annual radiographic examination of all persons between 14 and 21 was desirable if prevention was to be ensured.

Dr. D. S. PRICE said that the primary infection of childhood should not be regarded as benign, for it might progress to more serious manifestations. There were now more tuberculin-negative adolescents in the community than thirty years ago, and as a result more people were becoming infected for the first time relatively late in life. In Eire, for example, only 11 per cent. of healthy girls of 14 in the country gave a positive reaction. She thought there was a connexion between this and the high death-rate in the 15–25 age-group, and she asked for more consideration to be given to the negative reactor.

Mr. A. R. FOSTER, headmaster of the Belfast Royal Academy, attacked the present-day system of education as fostering the spirit of mental cruelty. He illustrated his points by recounting a day in the life of an average pupil aged 16, in which the child was compelled, by his teachers during the day and his parents in the evening, to expend a sum total of physical and mental energy that would make the day's work of a coal-heaver "look like a pleasant afternoon in the garden." He preferred quality rather than quantity in academic learning and thought that these deficiencies in our educational system were predisposing factors to tuberculosis.

Alderman P. ASTINS, J.P., drew attention to numerous gaps in the present legislative framework and the need for amending such legislation so as to make the local authorities responsible for many social activities now only permissive. He laid particular emphasis on the need for adequate rehabilitation of a patient when he left sanatorium, and he suggested that the state could profitably reserve a proportion of its lighter jobs for such people, as indeed it did already for the disabled ex-Service man.

Dr. W. M. MACPHAIL gave an account of the occupational training at Burrow Hill Sanatorium colony. Unfortunately there was not time for details, but he said that about a third of the patients stayed at the colony the full length of time, and these had little difficulty in finding suitable employment in after life.

Dr. LLOYD RUSBY distinguished between the tuberculous and the catarrhal type in a contact community and suggested that more research should in future be devoted to a study of the constitutional factor with the object of early recognition of susceptibility rather than the established disease.

Dr. BANSZKY described the modern technique of photographing the fluorescent-screen image.[1] This had a bearing on the question of mass radiography, for a permanent record could be obtained for ½d. a film.

Dr. J. B. MCDOUGALL opened a discussion on

Architectural Problems

from the points of view of the medical superintendent, who was satisfied if administration was made easy; of the patient, who should be encouraged by social and recreative amenities to look upon the institution as his temporary home; and of the rate-payer, whose main interest was the cost. He held little brief for the present tendency to erect sanatoria at an enormous expense. To illustrate his point he cited the recently constructed hostel at Preston Hall, which satisfied the most exacting demands and cost less than £200 a bed.

Mr. B. LUBETKIN (whose paper was read in his absence) discussed the influence of modern materials and constructive methods on the design of tuberculosis institutions. Light and air were essential, and he favoured cross-ventilation throughout. He advocated

1. See Dormer, B. A., and Collender, K. G., *Lancet*, June 10, 1939, p. 1309.

compactness, with administrative and clerical services centralised and the patients confined to the ground floor. He condemned the use of radiators as heating by convection and preferred the radiant type of ceiling heating with steel pipes through which hot water could be passed.

Dr. BLYTH BROOKE said that a tuberculosis dispensary both externally and internally should be one to inspire confidence and create a friendly and homely atmosphere. He outlined the details of lay-out and illustrated his points with a plan of the Finsbury health centre.

Dr. E. K. PRITCHARD, with experience of the new health services at Southwark, said that he was not in favour of conditioned ventilation, because it required closed windows and it was sometimes difficult to convince the tuberculous patient that you were practising what you preached.

Dr. F. R. G. HEAF thought well of Dr. McDougall's new hostel in view of the increased general demand for bed accommodation, and Mr. S. LOUTIT said that the designing of a tuberculosis institution should be the job of an outside architect and not of a borough surveyor.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society in Newcastle-on-Tyne on May 10 Prof. E. FARQUHAR MURRAY, the president, delivered his presidential address, entitled

Retrospect, Introspect, and Prospect

outlining the main changes in gynæcological practice which had taken place since 1911. Perhaps the most striking change was the development of a sound pathology which took regard of the whole patient. This was exemplified by the alteration in the treatment of retroversion and prolapse. In London in 1911 a third to a half of the laparotomies performed were for antefixing the uterus. As a conclusion to prolapse operations it was known to irreverent juniors as the "all red route." After such a training it was a relief to find that there were many backaches and very few retroverted uteri as a cause. When he came to Newcastle in 1919 he found that ventrofixation had not been done for many years, although numerous papers were still being read advocating it. To the Manchester school belongs much of the credit for establishing that a thorough plastic vaginal repair was sufficient to cure prolapse.

During the same period there had been a swing of the pendulum from radical surgery to conservatism. Fortunately the clean pelvic sweeps preferred by those who considered a tidy pelvic basin as of prime importance were less common now. Years ago he had been told by a general practitioner that those who believed in removing ovaries should be made responsible for the patients' aftercare. The replacement of hysterectomy by myomectomy in suitable cases was another instance of the same change in outlook. On the other hand, much of the conservative surgery practised had been unsound—e.g., the performance of salpingostomies without proof of any patency between the tube and the uterine cavity. Hormone therapy certainly was one of the main bulwarks of conservatism, but he wished there were a more satisfactory method of testing the preparations before the market was flooded at great expense to the hospitals.

In obstetrics perhaps the most striking advance he had seen had been the almost complete disappearance of craniotomy and its replacement by cæsarean section. Although the universal desire to provide anæsthesia for women in labour was commendable, under the present imperfect organisation of maternity services the idea that every midwife should have a powerful drug or apparatus at her disposal for every case was both dangerous and impracticable. As a matter of fact the vast majority of women passed through labour without any analgesia at all and took no harm whatever. By a judicious administration of the old-fashioned drugs it was possible to ensure a reasonably comfortable labour and a shorter and not intolerable second stage. For most women nature was not so terribly unkind as she was made out.

In the teaching of obstetrics one of the faults of the present system was the absence of a senior resident with the necessary standing in hospitals where junior residents were being taught their job. There was also a shortage of posts where men could learn postgraduate obstetrics. With the evolution of maternity services there would be an increased demand for general practitioners with such experience, and in some way this problem of instruction must be solved. The provision by most public-health authorities of a comprehensive consultant obstetric service was commendable, although some places had ignored the doctors and displaced them entirely in favour of whole-time officers. Such a step had the most adverse effect.

NEW INVENTIONS

A SYRINGE FOR SIALOGRAPHY

IN several cases I have experienced difficulty with the usual syringes in injecting Lipiodol into the salivary ducts prior to sialography, and I have therefore designed the new type shown in the figure.

This syringe, which is made by John Bell and Croyden, has rendered the technique of injection more precise and less irksome for both the patient and the operator.

HAMILTON BAILEY, F.R.C.S.

AN ELECTRIC UVIOMETER

Messrs. Henry Allday and Sons of 19, Warstone Lane, Birmingham, 18, have designed their new "A-T" uviometer on the principle of the photo-electric photographic exposure meter, the scale being calibrated directly in units of erythema dosage. The apparatus is easily portable, being some 5 in. long by 3¼ in. wide and 2 in. deep. It is said to be sensitive to radiations of between 2800 and 4000 Angström units, the glass filter absorbing most of the radiations within the visible spectrum. If this is so it will register only the therapeutically valuable rays of a mercury-vapour lamp. It should be useful for comparing the emission of different sources of ultraviolet light or for estimating the deterioration of a lamp after long use. The uviometer costs 15 guineas.

REVIEWS AND NOTICES OF BOOKS

British Encyclopædia of Medical Practice

Vol. XI. By Various Authors. Under the general editorship of Sir HUMPHRY ROLLESTON. London: Butterworth and Co. 1939. Pp. 730. 35*s*.

WITH the publication of this volume the editors—presumably with thankfulness—are nearing the end of their herculean task. Of the 36 articles the one by the editor-in-chief on the normal and pathological aspects of old age is worthy of special comment. In a wise and sympathetic survey Sir Humphry Rolleston defines normal old age as "the process of inevitable involution which leads to normal death." Attempts at rejuvenation, whether by operative methods or hormonal therapy, are he thinks alike to be deplored. Another important and succinct article is Dr. John Rickman's on sexual behaviour and abnormalities. Of the two methods of treating abnormalities, psycho-analysis and suggestion, Dr. Rickman thinks psycho-analysis the more durable and on the whole the more satisfactory, in spite of its length and cost—much depending, it may be added, on the skill and integrity of the psycho-analyst. The immense potentialities of the new and fascinating knowledge about sex hormones are presented in a tripartite article, in which Prof. E. C. Dodds deals with their sources and constitution, Dr. P. M. F. Bishop with the therapy of menstrual and menopausal disorders, and Dr. G. L. Foss with the use of male hormones.

Sciatica is considered by Dr. C. W. Buckley, who points out that the term is a loose one denoting merely pain in the distribution of the sciatic nerve whether due to a neuritis of the nerve-trunk or of its components (root sciatica), or referred from an adjacent structure. The various kinds of injection treatment are carefully described and Dr. Buckley brings out the growing importance of orthopædic measures in refractory cases. The accounts of injuries and diseases of the spine by Sir John Fraser and Mr. J. J. Mason, and those of the spinal cord by Dr. F. M. R. Walshe, Mr. Harvey Jackson and Dr. J. St. C. Elkington together occupy a hundred pages.

The fact that involuntary sterility in marriage is often amenable to successful treatment, provided that both partners are willing to undergo thorough investigation, is not as yet fully appreciated either by the public or the profession. Mr. Eardley Holland explains the position clearly, but he is not always quite up to date. Dermatology is extremely well handled throughout the encyclopædia, and Dr. Sydney Thomson's article on scleroderma and Dr. Arthur Whitfield's on skin affections due to insects and acarines fully maintain the standard.

Like its predecessors this volume is profusely and beautifully illustrated.

Shock and Related Capillary Phenomena

By VIRGIL H. MOON, A.B., M.Sc., M.D., professor of pathology, Jefferson Medical College, Philadelphia; director of laboratories, Jefferson Medical College Hospital. London: Humphrey Milford, Oxford University Press. 1938. Pp. 442. 21*s*.

THERE has been no monograph on traumatic shock since Cannon published his book in 1923 and therefore the appearance of this work must attract attention, especially as Cannon himself contributes a short introduction. The first eight chapters give a summary of the pathology and physiology of the capillaries, and in this part of the book the important contributions of Krogh and Lewis are well summarised. There follows a brief account of the various theories of shock with special emphasis on the theory of traumatic toxæmia. Most of the evidence in favour of this theory is already twenty years old and Prof. Moon makes little mention of the mass of contrary evidence published in recent years. He believes so firmly in traumatic toxæmia that he gives as his original contribution to the shock problem the post-mortem appearances of a fatal syndrome produced in dogs by implanting portions of striated muscle removed from other animals into the peritoneal cavity. The remainder of the book is occupied by brief descriptions of such varied conditions as anaphylactic shock, heat stroke, diabetes, diphtheria, cholera, mercurial poisoning and intestinal obstruction. The work is an excellent treatise in support of the theory of traumatic toxæmia, but the individual reader must decide how far it clarifies his ideas on shock and how far it increases his confusion.

Essentials of Medical Electricity

(8th ed.) By ELKIN P. CUMBERBATCH, B.M. Oxfd, F.R.C.S., D.M.R.E., medical officer in charge of electrical department and lecturer on medical electricity at St. Bartholomew's Hospital, London. London: Henry Kimpton. 1939. Pp. 528. 12*s*.

IN this edition, which was published just before his death, Dr. Cumberbatch has been able to include much new material without seriously increasing the size of the volume or its moderate price. No book on the subject now contains less that is unnecessary or more that is of real importance to the average medical man. In chapter 26, which forms an index of medical treatment, he will find a well-balanced account of the general trend of electrotherapeutics as well as of its value in individual diseases. Electrical testing is clearly described and the more obsolete methods have now been curtailed. The various kinds of diathermy, the most interesting and probably the most important of the forms of electrical treatment, fill about a fifth of the book. The uses and dangers of surgical coagulation in malignant diseases are set out fully, but it is surprising that Dr. Cumberbatch does not refer to the opinion held by many electrotherapists that malignant cells are especially susceptible to the action of heat and may therefore be destroyed at a temperature that is not high enough to coagulate normal tissues. By the application of this principle some of the risks of surgical diathermy may be avoided.

The influence of the author's trip to America is evident and has sometimes led him to do less than justice to continental workers. For instance, de Keating Hart published his paper on bipolar fulguration in 1907. It is difficult to see how this differs from electro-desiccation, which Dr. Cumberbatch says was devised in the United States by W. L. Clark, whose first paper was published in 1911. Dr. Cumberbatch says that diathermy was first used in England by Dr. F. Nagelschmidt in October, 1910. Actually it was used six months before on a patient of Sir Arbuthnot Lane's, and an account of this case was subsequently published. It is strange that there is no reference to the medical use of diathermy in trigeminal neuralgia. But these are small points, and do not detract from the general excellence of the book.

The Relief of Pain

A Handbook of Modern Analgesia. (2nd ed.) By HAROLD BALME, M.D. Durh., F.R.C.S., D.P.H., formerly professor of surgery and dean of the school of medicine, Cheeloo University, China. London: J. and A. Churchill. 1939. Pp. 399. 12*s.* 6*d.*

IN this edition the author has included many new ideas and methods and a chapter by Miss Marjorie Houghton has been added on the nursing of pain. Dr. Balme ranges over the whole field of medicine, surgery, obstetrics, gynæcology, and the specialties, describing the clinical features and therapeutics of aches and pains big and little and from top to toe. Of necessity much of his material is compiled from the writings of others, untested by his own experience, but the compilation is concise as well as comprehensive, the main interest is strictly practical, and there is a large and well-arranged bibliography. The result is a useful and stimulating book, by an author most appropriately named.

China at War

By FREDA UTLEY. London: Faber and Faber. 1939. Pp. 306. 12*s.* 6*d.*

Miss Utley, whose thoughtful study of Japanese economic and military strength, published three years ago under the arresting title of "Japan's Feet of Clay," brought her into the front rank of writers on far-eastern problems, has just returned from China where she was one of the very few British newspaper correspondents in the war zone and the only Englishwoman to visit the Yangtse fronts. Her book provides a dramatic record of the effect of modern warfare upon the Chinese nation. We see, as on a screen, the result of air-raids on crowded cities; we hear the moaning of the women over dead and mutilated children; we watch the procession of homeless thousands, from villages deliberately destroyed by advancing armies or razed to the ground as part of the "scorched earth" policy; we note the philosophic patience and dauntless courage of the suffering peasants; and we wonder afresh what will be the outcome of this unequal struggle.

But although largely taken up with the political implications of the present conflict, Miss Utley's book is no mere political propaganda. It is a fine attempt to depict events as she saw them, and in her description of the field medical services she is unsparing in her criticism of the corruption, the inefficiency and the nepotism of the army medical corps. Lacking in the most rudimentary forms of equipment, deficient in trained personnel, and devoid of any adequate preparation for the transport and care of the wounded, the corps did little but provide bare board and lodging for such casualties as could secure a lift on an ammunition lorry, or could somehow drag themselves to the nearest military hospital. Her record is not, however, all painted in sombre colours, for she gives an account of the heroic efforts being made by the Chinese Red Cross, under the leadership of Dr. Robert Lim, to repair the terrible defects in the medical service. Encouraged and supported by General Chiang Kai-Shek and his gifted wife, and working in close harmony with Surgeon-General Loo Chi-teh, Dr. Lim has recruited a large number of well-qualified civilian doctors; he has established a fleet of mobile units, to operate between the field and the base hospitals; he has equipped a limited number of hospitals with expert staff and adequate supplies; and he has organised a system of intensive training for old army doctors, dressers, first-aid attendants, and hospital orderlies. In the carrying out of this effort he is appealing for practical assistance and no reader of Miss Utley's narrative could fail to sympathise with Dr. Lim's appeal.

Physiology of Muscular Activity

(2nd ed.) By EDWARD C. SCHNEIDER, M.P.E., Ph.D., D.Sc., professor of biology at Wesleyan University, Middletown, Connecticut. London: W. B. Saunders Co. 1939. Pp. 428. 14*s.*

THE physiological basis of muscular activity in so far as it has a bearing on physical fitness is now a question of national as well as of scientific importance. Accurate and up-to-date information will be found in this book, where in less than 500 pages a very complete account of the experimental and applied aspects of physical activity is presented. The first part is devoted to the functional contributions of the organs and systems concerned. The account of the physiology of muscular contraction has been revised in the light of modern knowledge but fortunately has not become too intricate. Muscle metabolism, the rôle of oxygen and respiration are explained lucidly, and the blood, heart and circulation receive due attention. Throughout these chapters there are innumerable practical examples in which the physiological reactions are given quantitative expression for specified types of exercise. The later chapters deal with the application of these principles to the problem of physical fitness. The effect of repeated exercise in promoting the improvement associated with "training" is fully discussed. The harmful effects of excessive or uncontrolled activity are considered in relation to fatigue and to staleness. A detailed account is given of various tests for physical fitness and this should be of great value to workers who have to examine recruits or candidates for work which demands a certain standard of fitness. Finally there are chapters on physical exertion under certain specified conditions such as in heavy industry, with varied external temperature, and at high altitudes. The book can be strongly recommended both for its scientific quality and its practical outlook.

Urology

(4th ed.) By DANIEL N. EISENDRATH, M.D., consulting urologist, American Hospital, Paris; and HARRY C. ROLNICK, M.D., attending urologist, Michael Reese, Mt. Sinai and Cook Co. Hospitals, Chicago. London: J. B. Lippincott Company. 1938. Pp. 1061. 42*s.*

SEVERAL important advances have been made in urology since the appearance of the third edition of this work four years ago, and these have necessitated a complete revision of the text. A large number of the illustrations that appeared in previous editions have been replaced, and new sections have been added on cystometry as a help to diagnosis in urinary dysfunction of the bladder, and on the diagnosis and operative treatment of adrenal hyperplasia and neoplasm. There are also new chapters on genito-urinary diseases in women and in children.

By concentrating attention on diagnosis and general lines of treatment, and by avoiding unnecessary descriptions of operative technique, the authors have succeeded in incorporating all this new matter without any considerable increase in the size of the volume. Their original aim has been kept in view—that of simplifying urology for teaching purposes—and, though it is one of the most complete, this is still one of the most readable works on the subject.

THE LANCET

LONDON: SATURDAY, JULY 8, 1939

STANDARDS OF FITNESS

GALSWORTHY divides human beings into two classes. The first maintain that whatever is is right, the second that whatever is is wrong. For a long time the second class have told us that we are a C3 nation, underfed and under-exercised. While admitting that the standardised death-rate fell during the last third of the nineteenth century from 21 to 17 per thousand, and during the first third of this century to about 13 per thousand, they say that it does not follow that the national stamina has improved to a corresponding degree. In this they have the backing of the dietitians, who say that at least half the population—that half moreover who produce more than their share of children—do not get enough to eat. They have also been able to quote the Army Council, who said: "the present position (in 1935) is that if three men come forward to enlist one is rejected on sight, the second is rejected for physical, mental or educational reasons, and the third is finally approved." The medical examination of militiamen has, however, given them a severe setback. Instead of the 66 per cent. of rejections that they might have forecasted, of the first 50,000 men examined only 2·6 per cent. were found to be unfit for any form of military service, 92·5 per cent. were passed as fit to be called up for training, and the remaining 4·9 per cent. as fit for the lighter jobs in wartime. The politicians have lost no time in making capital out of these surprising findings. "I should have thought," said Mr. ERNEST BROWN, "that every member of the House, and everybody outside, would be proud of the fact that our social legislation within the last thirty years has given us these great results." But the triumphs of social legislation can hardly explain the discrepancy between the acceptances for the militia today and for the army only three years ago, and suggestions have been made in Parliament that the examination of the militia is inadequate and (provocatively) that "under any circumstances the men have got to be inside the armed forces."

The main reason for the discrepancy lies in the different standards of acceptance, and the effect of even seemingly minor alterations can be illustrated by the fall in rejections for the army that has followed changes in the last few years. Up to 1936 recruits had to reach a definite standard of height, weight, chest-measurement, vision and dental condition, and to be free from certain minor physical defects; they had, in short, to be practically 100 per cent. healthy in all respects. On these standards, in the year 1935–36, 18·8 per cent. of would-be recruits were rejected by army recruiters on educational or gross physical grounds without seeing the medical officer, and another 21·8 per cent. on the medical examination. In 1936 instructions were issued that recruits should not be rejected for minor physical defects that would not interfere with their duties, and since 1937 they have not been rejected on dental grounds. In consequence the number of rejections by recruiters fell to 3·8 per cent. and by the medical officers to 14 per cent. in 1937–38. There are certain fallacies which make even these figures larger than they should be. Some units have special requirements—for example the Guards, the gunners of the Royal Artillery, and the drivers of the Royal Engineers—and if a man applies for enlistment in one of these he may be rejected on medical grounds although he would be accepted for other units. Further, an uncertain number of men who are rejected at one recruiting centre try their luck at others, so that they appear several times in the list of rejections.

Taking the figures for last year, the total rejections for the army are only some 10 per cent. greater than for the two active-service grades of the militia. This difference might partly lie in the sources from which the recruits are drawn. The militia are an almost entirely unselected sample of our men of 20 and 21. A large proportion come from comfortable homes and have been well fed during their adolescence. Most recruits for the regular army have not had such advantages. Many come from the homes of the unemployed and some have themselves been out of work for several years. The importance of this factor has been demonstrated by the number of rejected recruits who have been raised to the required standard of weight, chest-measurement and even height at the two recruits' physical development depots. In spite of the changes in the army requirements in the last few years, however, they are still sufficiently more exacting than those of the militia to account for a higher rate of rejections. The army examination aims at determining whether a candidate is fit for the unit he applies to join; the militia examination whether he is fit to be a soldier at all. There is, for example, no specified minimum of height, weight and chest-measurement for the militia, and some of the men with minor defects of feet or vision who are placed in grade 2 (a) of the militia would be rejected for the army. Thus those who draw conclusions as to improvements in the national physique by comparing the figures for the militia with those of the army, and especially those of the army several years ago, are deceiving themselves. No-one will deny that the health of our young men has turned out to be much better than expected, but we must look elsewhere for proof that it is much better than it was.

AN ALTERNATIVE ROUTE

M. & B. 693 is twenty times less soluble in water than is sulphanilamide; for this reason it is absorbed more slowly and less completely from the alimentary tract. Actually the rate and degree of this absorption vary from patient to patient in a way which cannot yet be explained. These considerations, and the fact that coma or vomiting may render it difficult or futile to give the drug by mouth, make it desirable to find if possible some other method of administration by which an adequate concentration in the blood can be attained speedily and surely. The answer is the sodium salt, known here as M. & B. 693 Soluble, and more descriptively in the U.S.A. as sodium sulfapyridine. Although several passing references to this compound have appeared in recent papers, the first full description of its use and action is contained in three papers which we publish this week and in another by MARSHALL and LONG [1] whose studies at Baltimore are evidently independent of the work going on in England and indeed have been conducted on different lines.

These authors, having satisfied themselves by a variety of toxicity tests in dogs and rabbits that the drug had a good expectation of proving safe, decided to give it to patients intravenously, taking the view that since a solution of sodium sulfapyridine is strongly alkaline this is the "only possible route" for injection. The solution used had a strength of 5 per cent. which is nearly isotonic and a pH of 10·7; the dose recommended is 0·06 g. per kg. of body-weight and it is emphasised that the injection should be made at the rate of not more than 5 c.cm. per minute. Studies of the subsequent concentrations in the blood suggest that diffusion into the tissues is nearly complete within ten minutes; the blood concentration is well maintained, scarcely falling at all during the first hour and to a varying extent, averaging a diminution to about two-thirds of the original maximum, in four hours. Ten cases of pneumonia undergoing this treatment are briefly described, serving simply to show that it is feasible and apparently effective. The indications for the parenteral route are three: incapacity to take sulfapyridine by the mouth, failure to attain an adequate blood concentration after administration by the mouth, and necessity for obtaining maximum effect as rapidly as possible. In severe cases it is evidently well to begin with an intravenous injection, thereby bringing the full action of the drug to bear within a few minutes, and to rely on oral administration for maintaining it. MARSHALL and LONG found it was rarely necessary to give more than two intravenous injections; sometimes even one might be enough. They have given sodium sulfapyridine intravenously to thirty patients in all, and observed no ill effects except that the injection sometimes caused vomiting. This vomiting, which occurred also in dogs, is of minor importance since it occasions no loss of the drug; it is of interest because it calls in question the current belief that the nausea and vomiting produced by oral administration are due to local action on the gastric mucosa.

Turning to the clinical trials in this country, Dr. CABLE records the successful treatment of a case of pneumococcal meningitis, while Drs. COOPE and LEATHES were able to control pneumonia in a patient with a bleeding peptic ulcer—an exceptional (but strong) contra-indication to oral therapy. In both these cases the intramuscular route was used, and this was also the method adopted by Dr. GAISFORD and his colleagues in treating a considerable series of cases, 38 of which are briefly described. A 33⅓ per cent. solution was used, 1 g. being therefore contained in the conveniently small volume of 3 c.cm.; this is injected deeply into the gluteal muscles, where it causes little pain but may produce necrosis and abscess formation if any of the solution escapes into the subcutaneous tissues. The dose was repeated several times at intervals of four hours even in patients whose treatment was to be continued by the oral route. GAISFORD and his colleagues have studied the rise in blood concentration during this form of treatment: the levels attained varied considerably, and the advantage of the intramuscular route appears to be rather the certainty of reaching an adequate (though often only moderate) concentration in the blood than rapidity in reaching it. They also tried the intravenous injection of diluted solution, but gave it up owing to the vomiting produced.

The direct conflict of opinion about the best route of administration seems to be a matter of balancing discomfort and disturbance—possibly to be mitigated by varying the intravenous technique—against the advantages of much more rapid effect and of fewer injections. This form of treatment is evidently a useful advance and free from serious dangers; on the other hand it demands skill in the use of a needle and judgment in deciding when and how best to use it.

1. Marshall, E. R., and Long, Perrin H., *J. Amer. med. Ass.* April 29, 1939, p. 1671.

BOARDING-OUT

SCOTLAND has long been admired for the system there employed of boarding-out insane and defective persons in private families. During eighty years much experience has been gained so that the system works on the whole smoothly and effectively.[1] It is however emphasised in the twenty-fifth annual report of the General Board of Control for Scotland [2] that the selection of suitable cases, and to some extent of suitable guardians, requires close inquiry and local knowledge. The public-assistance officer and district medical officer are immediately concerned in this, though the visits of a deputy commissioner of the board provide not only statutory inspection but the specialised and central supervision found by experience to be necessary for keeping up a general high standard of family care in widely varying districts and

1. Stone, J. A., and Evans, A. E., *J. ment. Sci.* 1938, **84**, 381.
2. Edinburgh: H.M. Stationery Office. 1939. Pp. 46. 1*s.* 6*d.*

circumstances. Defectives are apparently a more difficult problem than those sometimes bluntly described in the report as pauper lunatics. The boarding of insane patients, it is said, does not provide the same difficulties as occur in the case of defectives. In the case of the former, the majority suffer from some degree of dementia and are quiet, contented and well-behaved. The report remarks on the number of extremely disordered patients with paranoid tendencies who were apparently leading quiet peaceful lives in comfortable homes. Many of the defectives boarded in urban areas presented a social or moral problem; often it had been the reluctance of the relatives to hand over a defective to the care of strangers which led to the patient remaining a slum-dweller with nothing to occupy him but aimless wandering or standing at the street corner. The defective placed under the care of well-chosen guardians on a small farm or croft was much happier, sharing in the work and family life of those among whom he lived. The high-grade defective has been found to be unsatisfactorily dealt with so long as there is inadequate provision of certified institutions and special schools, and where these defectives are under domiciliary care there is great need for them to have some communal interest and activity. It is made clear in the report that many of the 1032 patients provided for in private houses at the beginning of 1939 had never been in any institution and that the term boarded-out is only loosely applicable. The whole question of family care, as an alternative to institutional care, needs more attention in England than it has received. The lessening of the financial burden upon the community is only one of its claims to consideration. As the report of one of the deputy commissioners in Scotland indicates, it has been coming to the fore in the United States; the survey by H. M. POLLOCK [3] of the provision available in Europe has no doubt contributed to this awakening of interest, though in one or two states in America boarding-out has been practised for a number of years.

ANNOTATIONS

MEDICAL EMERGENCY IN CHINA

A FEW weeks ago Dr. Harold Balme gave in our columns [1] some account of the effect of two-years continuous warfare in China and set out to answer the question, foremost in people's minds here, how far the national medical services of China are in a position to cope with the present emergency. The answer is partly given in a book which we review this week on another page. Miss Freda Utley, who has accompanied the armies on several fronts, tells of the inefficiency of the army medical corps and the heroic efforts of the Chinese Red Cross. Under the leadership of Dr. Robert Lim the Red Cross has organised a fleet of mobile units and is engaged in the intensive training of their personnel. The League of Nations has responded to his appeal by the despatch of three commissions to organise effective measures to combat the serious outbreaks of epidemic disease, but what is now urgently needed is a model surgical unit to act as a teaching and reconstructive centre and to set a standard in the repair of injuries resulting from the war. It is a hopeful sign of the times that the British Orthopædic Association is willing to organise one of these centres as a mark of sympathy with the Chinese people, and to equip a teaching unit of 250 beds under the direction of an orthopædic expert to be entitled "The Robert Jones Emergency Relief Surgeon." Members of the association have themselves generously subscribed a sum of £1100 towards the £3500 that would be immediately required. The names appended to the letter on p. 99 are sufficient guarantee of the practical wisdom likely to be shown in the disposition of the money. Many people must have been deterred from contributing to the relief of suffering in China by the feeling that their quota would be negligible in face of the magnitude of the need. But here is a direction in which something effective might be done with moderate means, and we commend the venture to our readers and through them to all who are alive to the welfare of China and what it may mean to posterity.

1. *Lancet*, April 8, 1939, p. 836.

CANCER RESEARCH IN YORKSHIRE

THE investigations [4] carried out in Leeds under the direction of Prof. R. D. Passey and in Sheffield by Sir Edward and Lady Mellanby and also by Prof. H. N. Green cover a wide field. In Sheffield J. W. Orr and D. E. Price have studied the induction of primary cancer of the liver by an organic dye—butter yellow. This substance produces first a cirrhosis of the liver, and the histological changes taking place during this process are being studied in detail. An interesting observation is that another substance—carbon tetrachloride—also produces cirrhosis of the liver, but does not induce liver cancer. The changes in the metabolism of liver cells during this process of carcinogenesis have been followed by Orr and L. H. Strickland. An attempt has been made to determine whether carcinogenic substances are formed in a tissue (the skin) subjected to a physical carcinogenic agent (prolonged exposure to ultra-violet light). The skin was finely minced, dried and extracted by fat solvents. The extract was then either applied to the skin for a prolonged period or injected subcutaneously. No evidence of the presence of a fat-soluble substance with carcinogenic properties was obtained. Dr. Clemmesen of Denmark, who has been working in the Leeds laboratory as a guest, had found in confirmatfon of previous workers that X radiation of the whole animal impaired an immunity to the transplantation of tumours. A similar effect was produced by this procedure on the resistance to the Shope-fibroma virus. This virus induces in rabbits a transient tumour-like proliferation of connective tissue. If the virus was injected after a previous treatment with X rays the tumours which developed were larger and persisted longer, but eventually they regressed as they do in normal untreated rabbits. The experiments were extended to the Shope-papilloma virus. This virus when rubbed into the skin produces extensive warty growths which sometimes develop into true malignant growths. So far

3. State Hosp. Press, Utica, N.Y. Family Care of Mental Patients. 1936.
4. Thirteenth annual report of the Yorkshire Council, British Empire Campaign, Park Square, Leeds.

irradiation of the whole animal has not produced effects for this virus analogous to those demonstrable for the fibroma virus.

The work of the last few years has brought into prominence the importance of the inherited susceptibility to cancer as an ætiological factor. This aspect of the cancer problem has been studied experimentally by Mrs. K. S. Bonser in inbred strains. In agreement with other workers she arrives at the conclusion that there is no evidence of a general susceptibility to cancer for all organs. As a rule, if a special susceptibility to cancer exists it is focused on one particular organ and strains of mice which possess such a special tendency to cancer in one organ often show a very decided resistance to cancer in some other organs. During the past year two apparently well-authenticated claims had been made concerning the chemotherapy of cancer. It was stated that a simple organic substance (heptaldelyde) was able on injection to produce regression of transplanted and of spontaneous tumours in animals. A similar claim had been made for a hydrolysate of heart muscle. Both these substances have been examined for their therapeutic effects, but these claims could not be substantiated. In Sheffield the Mellanbys have continued their studies on the distribution of the Rous-sarcoma virus after injection into the blood-stream. They find that it disappears from the blood very rapidly, being taken up by the cells of the different organs. And this is true not only for fowls, for the connective tissue of which the virus is specifically pathogenic, but also for rabbits for which the virus is not pathogenic. Professor Green has continued his investigations on the destructive effect of pyocyaneus toxins on tumour cells. This effect is enhanced by combining the injection of toxin with that of an alkaloid (colchicine) which arrests cell division. The experiments suggest the possibility that by a combination of such agents a more selective therapeutic effect may be obtainable.

A useful innovation of this report is a synopsis giving in non-technical language a summary of some of the work and its bearing on the problems of human cancer.

URINARY EXTRACTS INHIBITING GASTRIC SECRETION

SOME years ago Farrell and Ivy [1] showed that the inhibition of gastric motility and secretion that follows the ingestion of fats is due to humoral mechanism rather than to nervous or direct action, since inhibition is still produced in a transplanted and denervated gastric pouch when fat is taken by mouth. The humoral agent has been proved not to be a fat or one of the products of digestion of fat but a specific duodenal chalone, which has been called enterogastrone. Next Sandweiss, Saltstein and Farbman [2] found that the injection of extracts of pregnancy urine successfully prevents the development of jejunal ulcers in dogs subjected to the Mann-Williamson operation. This work has now been extended and such extracts have been shown to have the power to reduce gastric secretion but not motility. The urinary gonadotropic hormone of pregnancy, prolan, has been excluded as the active substance since the urine of normal males and females contain it, and lately Gray, Wieczorowski and Ivy [3] have suggested that enterogastrone consists of two fractions, one affecting motility and the other secretion, and that the active urinary extract is one of these fractions. Until now the enterogastrone extracted from the duodenum has not been used clinically because it always contains protein impurities which lead to the development of refractoriness if therapy is continued. Urinary extracts can, however, be prepared free from protein impurities, and furthermore, they are some sixteen times as potent as the duodenal ones. It seems, therefore, that the urine may be a more effective as well as a more convenient source of enterogastrone, and that urinary extracts may have a place in the treatment of hyperacidity and peptic ulcers.

1. Farrell, J. I., and Ivy, A. C., *Amer. J. Physiol.* 1926, **76**, 227.
2. Sandweiss, D. J., Saltstein, N. C., and Farbman, A., *Amer. J. digest. Dis.* 1938, **5**, 24.
3. Gray, J. S., Wieczorowski, E., and Ivy, *Science*, May 26, 1939, p. 489.

THE LAST THOUSAND FEET

THE summit of Everest apparently lies near the ceiling of man's endeavour from more than one point of view. Not only will he, if he reaches the summit without an oxygen apparatus, be asphyxiated, according to Henderson [1] and a host of others, but Matthews [2] says he will also freeze solid. If he escapes these ills, Campbell [3] warns him that he will suffer from heart-failure and liver damage. Henderson has tried, as many have done before, to calculate the oxygen requirements of the climbers near the top and to compare them with the oxygen actually available. He fairly assumes that the amount of oxygen that the men can obtain from the air decreases steadily as they rise. Unfortunately he then proceeds to use as a basis for his calculation Somervell's statement that he and his companion had to "take 8 or 10 respirations for each step and stop to rest for a minute or two every 20 or 30 yards." This was certainly true in 1924 but things are different now. Greene [4] tells us, for instance, that in 1933 when the climbers were carefully acclimatised they needed only two or three breaths to a step and frequent halts were unnecessary. So great an improvement partly invalidates Henderson's argument, though whether it is possible to reach the summit without additional oxygen remains in doubt. Henderson dogmatically asserts that the inhalation of oxygen from an open-circuit apparatus is of no value during climbing, because all the oxygen is blown away by the tremendous volume of breathing, but the published statements of several mountaineers are in direct conflict with his opinion. Two types of apparatus were taken to Everest in 1938. Of these Lloyd [5] says that the closed-circuit type favoured by Henderson was unsatisfactory for reasons which are not yet clear. It is obvious that were it possible to produce a light and efficient apparatus of the kind used for rescue work in mines its wearer could climb on Everest as fast as at sea-level. But the problem is not easy, for no tests can adequately simulate conditions on the mountain, where repairs and adjustments to a complicated apparatus are nearly impossible. The other type taken was the simple open-circuit apparatus familiar to physiologists for many years, a development of which was described by Greene [6] in 1934. In this model a corrugated rubber tube was substituted for the more easily damaged canvas bag, and an alternative mouthpiece was provided in the form either of a mask or a tube to be gripped between the teeth. In the 1938 expedition

1. Henderson, Y., *Nature, Lond.* June 3, 1939, p. 921.
2. Matthews, B. H. C., *J. Physiol.* 1932, **77**, 28.
3. Campbell, J. A., see *Brit. J. Exp. Path.* 1935, **16**, 39.
4. Greene, R., *Everest* 1933, London, p. 261.
5. Lloyd, P., *Nature, Lond.* June 10, 1939, p. 961.
6. Greene, *Lancet*, 1934, **2**, 1122.

an earlier and rather heavier model was chosen, the extra weight (allowing 1000 litres of oxygen) being nearly 3 lb. It was calculated that when set to deliver 2 litres of oxygen per minute, it would "bring the climber down" from 29,000 ft. to 20,800 ft., at which height the acclimatised man can climb at almost alpine speed. In tests at a height of about 23,000–26,000 ft. Lloyd [5] found that the open apparatus proved its value, not only in increasing the speed of climbing, but in lessening strain and fatigue. Above 26,000 ft. the increase in climbing speed became more and more apparent, especially on easy ground. These results seem definitely to negative Henderson's conclusions, and unless the design of closed-circuit apparatus can be radically improved the next expedition to Mount Everest would be well advised to depend on the open-circuit inhaler.

ASSAY OF ŒSTROGENS IN PREGNANCY

WHY œstrogen should be excreted during pregnancy we do not know; some day perhaps we shall find out. In the meantime one of the things which may usefully be done is to measure the excretion in a number of individuals so as to define its limits and possibly to correlate its variations with pathological conditions. The œstrone and œstriol in the human urine of pregnancy are free only to a small extent. For the most part they exist in combination with inert substances in forms which are relatively, but not completely, inactive when assayed by their ability, on subcutaneous injection, to bring a spayed test animal into œstrus. In the present state of doubt as to what is significant, the obvious course is to measure the amounts of free and inactivated œstrogen separately. The latter may be released from combination by acid hydrolysis, and it then appears in such quantities as to be worth subdividing into œstrone and œstriol fractions. In 1935 Cohen, Marrian and Watson [1] published curves showing the average urinary excretion of free and combined œstrone and œstriol for different periods of pregnancy in a number of women, thereby establishing a general rule. The latest investigation of this kind is that of Dr. Hain [2] of Edinburgh, who has made assays in 47 women during the latter half of pregnancy, recording not only the average findings but the individual assays in each case. In many instances several assays at monthly intervals have been made on the same person. This laborious work has disclosed great individual variations in the amount and behaviour of the urinary œstrogen, so great as to cast suspicion on attempts to associate diminished or increased excretion with types of abnormal pregnancy. Apart from establishing a kind of prophylaxis against such premature correlations, it is doubtful if the research has added to the sum of theoretical knowledge. But this, as already suggested, was hardly to be expected and in no way reflects upon the quality of the work or the necessity for doing it. We emphasise this, because we believe that in certain particulars its presentation is open to criticism.

In the table of results, for instance, the concentrations of combined and free œstrogen and the two fractions of the former are all expressed in milligrammes per litre. Yet the sum of the quantities of œstrone and œstriol far exceeds the quantity of combined œstrogen of which they are the component parts. This is manifestly impossible; and, although the explanation for the discrepancy can be guessed by studying the body of the paper, it is by no means obvious and in any event would probably be quite incomprehensible to those unfamiliar with the technicalities involved. In mice, which were the test animals, œstriol has a different order of activity from that of œstrone when assayed by Dr. Hain's method. Consequently, the increased œstrogenic activity of urine on hydrolysis is chiefly due to the œstrone liberated, the liberated œstriol, though many times greater in amount, having little effect on the assay. The "milligrammes" of combined œstrogen in Dr. Hain's table refer not to the actual collective weight of this group of substances, but to an equivalent and much smaller weight of standard œstrone against which its activity has been checked. This value is therefore of the same order as the weight of the urinary œstrone after separation, which, within the limits of error of biological assay, is given in real milligrammes. The separated œstriol, the assay of which is checked against a sample of pure œstriol, is also given, with the same reservation, in real milligrammes, but owing to the relative inactivity of œstriol the amount is large. It is a pity that Dr. Hain did not make this clear in her table of results; for this table is valuable and likely to be used for reference. Confusion is not lessened by phrases in the text such as "œstrone, i.e., combined œstrin," which implies (erroneously) chemical identity when quantitative similarity of activity is meant. Control experiments, which seem to have been conscientiously carried out, deal with various difficulties—such as the separation of œstrone and œstriol without destroying the former, the optimal time for hydrolysis—points whose bearing on the results are readily appreciated. It is however not clear whether or not the slight œstrogenic activity of combined œstrogen before hydrolysis—possibly important when large amounts are present—is included in the preliminary assay of "free" œstrogen. While the concentration of androgen in the urine is found to be less than that of the non-pregnant woman, it seems to show no progressive change with the advance of pregnancy.

The individual irregularities in the concentrations of excreted hormones raise the question whether the straightforward analysis of urine will prove to be of any more diagnostic value than (say) the simple estimation of urea. It may be that the problem with which the kidney is dealing at any moment will also have to be elucidated. If a guess had to be made, it would be that the final clinical criterion will be something in the nature of a renal or hepatic function test, in which the body is given a measured task to perform. As Dr. Hain points out, knowledge of the metabolism of these hormones is in its infancy, so that a rational basis for such a test does not yet exist.

1. Cohen, S. L., Marrian, G. F., Watson, M., *Lancet*, 1935, **1**, 674.
2. Hain, A. M., *Quart. J. exp. Physiol.* 1939, **29**, 139.

PHARMACOGNOSY

THE Hanbury medal has been awarded to Mr. T. E. Wallis, reader in pharmacognosy in the University of London. The occasions on which the award committee (composed of the presidents for the time being of the Linnean, Chemical and Pharmaceutical Societies, and the chairman of the British Pharmaceutical Conference) has conferred this honour on a British pharmacist have been sufficiently infrequent to make the present choice outstanding. This medal, a memorial to Daniel Hanbury, F.R.S. (1825–75), is given for high excellence in the prosecution or promotion of original research in the natural history and chemistry of drugs; the first recipient was Flückiger in 1881. The aim of the work done by Mr. Wallis, chiefly in the Pharmaceutical Society's research laboratories during the past

39 years, has been (1) to discover those details of gross morphology and of microscopical structure by which it is possible to identify correctly vegetable materials used in medicines either in the entire condition or in the form of powder, (2) to provide characters by which adulterants can be detected in foods and drugs, especially when in the powdered form or in broken pieces, (3) to discover general methods by which the proportions by weight of powdered materials —drugs or foods—may be accurately determined by means of the microscope, (4) to devise new optical apparatus and mechanical contrivances for use with the microscope in the study of powdered drugs, and (5) to devise new methods for the determination of the purity of certain chemical substances used in medicine and pharmacy. The results achieved by Mr. Wallis are recorded in thirty-seven papers describing original work which has made it much easier to maintain an efficient control over the purity and quality of food and drugs.

THE ILLEGITIMATE CHILD

TWENTY-ONE years ago the outlook of the infant born out of wedlock was precarious indeed: "The life of the unwanted baby is terribly easily snuffed out with his first sunset," wrote the editor of *Maternity and Child Welfare* in 1918. This wastage of life was not due to any inherent delicacy, but to the deplorable social and economic conditions which the child inevitably had to face, and the fact that the infant death-rate was at least twice as high among illegitimate babies as among the legitimate did not lie at all heavily on the public conscience. But the losses inflicted by the war began to lead people to think that all young life, however lowly, was worthy of preservation, and those whose efforts to promote child welfare had hitherto met with indifference became all at once recognised as benefactors. At about that time a conference held at the Mansion House led to the formation of the National Council for the Unmarried Mother and her Child. Mrs. H. A. L. Fisher, who became chairman of the council, has served in that capacity ever since, and has written a booklet entitled "Twenty-one Years" [1] to mark its coming-of-age, which was celebrated at the annual meeting held on June 13 at the Drapers' Hall.

At first the council encountered a great deal of prejudice and opposition; it seems strange to find that in 1918 nursing associations and maternity societies were only beginning to relax the rule that their nurses might not attend the birth of an illegitimate child. Many people then still honestly believed that measures for the benefit of the unmarried mother were a challenge to the accepted standards of morality, and the education of public opinion, to promote which the council set itself, was an uphill task. Gradually, however, sympathy was enlisted, and the fact rammed home that, whoever else was to blame, the child was innocent and deserving of help. The council soon found itself with an immense volume of work, and Mrs. Fisher says: "Our story has been one of continuous overwork, brilliantly achieved, on the part of a staff which has never had enough room, enough money or enough help, but which nevertheless has made the council's life its own." The law bore no less hardly on the illegitimate child than did the actions of well-meaning but misguided moralists, and credit is due to the council for its untiring and fruitful efforts to secure reform of the bastardy laws. Since its inception the legal position of the unmarried mother and her child has improved in many directions—for example, in the increased amount payable under an affiliation order, in the legitimisation of the child by subsequent marriage of the parents, and in the declaration of legal kinship between a mother and her illegitimate child in cases of intestacy. In all these reforms the influence of the council has made itself felt. The council believes that it is almost always desirable to keep mother and child together where possible, and regards the solution by adoption as a good deal less than the best. It has worked hard to promote the establishment of really good homes and hostels, and is in close touch both with Government departments and with other national and religious organisations. Perhaps most important of all it conducts its work in strict confidence and with unsentimental sympathy.

1. Obtainable from the National Council for the Unmarried Mother and her Child, 117, Piccadilly, W.1.

THE ROYAL COLLEGE OF NURSING

THE King's command that the College of Nursing shall henceforth be known as the Royal College of Nursing is timely, for we are beginning to realise that we are perhaps taking our nurses too much for granted and that the material return we offer them for their services is not commensurate with the gratitude we all feel. The college which was founded in 1916 to provide a central organisation for trained nurses was granted a royal charter in 1928. It has today a membership of some 30,000 trained nurses and a student-nurses' association of nearly 8000 nurses in training. The college has always recognised the importance to the community of an expert nursing service, adequate in numbers, quality and training to tend the sick and to safeguard the health of the public, and it has worked to improve the conditions in the profession and to attract the best kind of recruit. Our troubled times have added to its duties during the last year. Acting on behalf of the medical officer of health of the London County Council it is now responsible for the distribution of nursing personnel to the various sectors in which the hospitals in the London area have been grouped under the emergency hospital scheme, while in Scotland it is entirely responsible, under the Central Emergency Committee, for the recruitment and organisation of trained nurses to the civil nursing reserve.

Medical men and women who have special opportunities for appraising the worth and work of nurses will recognise the fittingness of the new title.

CHEST LEADS IN CARDIOGRAPHY

THE physiological variations in the form of the curves obtained with a precordial exploring electrode are gradually being worked out in normal people, and comparison of these with the large number of tracings taken in cardiac lesions is clarifying the meaning of changes in these leads. The subject is a complex one because, unlike curves obtained with limb leads, a small shift in the position of the electrode applied to the precordium may produce a big alteration in the form of the curve. In order to assess the significance of a curve the exact position of the exploring electrode on the chest wall—especially its relation to the cardiac apex—and the range of normal variations obtained at this area, must be known. Chest leads have been of greatest service in the diagnosis of cardiac infarction, though they may help in other lesions. As with limb leads alterations in the direction and form of the T wave and deviations of the RS–T segment are important, but in the precordial lead special value is also attached to changes in the

form of the initial ventricular deflections or Q R S complex. If a single precordial position only is used the area over the cardiac apex is generally considered the most reliable of all, and Robinson, Contratto and Levine [1] find that absence of the R wave in the apical lead is almost invariable in the anterior type of cardiac infarction but rare in the normal heart and in other cardiac lesions. They think that a small R wave of less than 2 mm. is questionable evidence of infarction. They show that with only a small shift of the electrode medially from the apex the R wave may diminish in amplitude considerably. Low amplitude or even absence of R is found in ascites and left pleural effusion, the wave increasing or reappearing when the fluid is aspirated. Inversion of the T wave in the apical lead is less constant and more transient in anterior infarction, and is also often present in cardiac lesions other than infarction —for example, mitral stenosis, high blood-pressure and syphilitic aortitis. Even when the heart is quite normal an inverted T is occasionally found in the apical lead. In posterior cardiac infarction the apical lead gives no evidence not provided by tracings with the ordinary limb leads. Very similar conclusions are reached by Vander Veer and Edwards [2] after a study of 102 cases showing absent or small R wave in the apical lead. They found anterior cardiac infarction in 67 cases when this wave was absent, the remainder being ascribed to luetic aortitis, coronary disease and possibly cardiac enlargement. They agree with Robinson and his colleagues that disappearance of R is a change of long duration and that it rarely returns to normal, the T wave changes being, on the contrary, of much shorter duration, but they regard inversion of T in lead 1 and in the apical lead as increasing the significance of a small or absent R wave in the apical lead.

BIOPSY OF THE CERVIX

CARCINOMA of the uterine cervix, like that of other tissues, passes through an early almost symptomless phase before bleeding and discharge demand relatively late investigation. By this time the growth may have become so extensive as severely to reduce the chances of cure. Assuming that the two available therapeutic weapons, surgery and radium, have been exploited nearly to their limit, results can only be improved by earlier diagnosis. The cervix is in many ways an ideal organ for this purpose: it is readily accessible to inspection and palpation, and its relative insensibility to cutting and cauterisation allows a histological biopsy to be undertaken without admission to hospital and without an anæsthetic. Wollner [3] of New York and Phaneuf and Belson [4] of Boston have independently drawn attention to the remarkable number of unsuspected carcinomas of the cervix that routine biopsy will reveal—in 59 examinations Wollner found 2 and in 100 Phaneuf and Belson found 10. Wollner recommends the removal of the lower half of the cervical mucosa to the point where it joins the healthy squamous epithelium of the portio vaginalis, and he uses a diathermy cutting loop. Phaneuf and Belson use a sharp knife, cauterising the incised area with caustic or electricity, a procedure that they say will also clear up nearly all cases of simple chronic cervicitis. Biopsy, a method which is only suited to the specialist, cannot take the place of the ordinary pelvic examination, but it can be of great value in differentiating between early carcinoma and chronic inflammation in suspicious areas found with the vaginal speculum. Wollner urges that every woman over 30 should have at least one routine tissue examination of the lower third of the cervix, and though this suggestion is likely to remain an unfulfilled ideal, it is no doubt a possible way of securing earlier treatment.

1. Robinson, R. W., Contratto, A. W., and Levine, S. A., *Arch. intern. Med.* April, 1939, pp. 711 and 732.
2. Vander Veer, J. B., and Edwards, J. C., *Amer. J. med. Sci.* May, 1939, p. 663.
3. Wollner, A., *Surg. Gynec. Obstet.* Feb. 1, 1939, p. 147.
4. Phaneuf, L. E., and Belson, M. O., *New Engl. J. Med.* May 25, 1939, p. 21.

A NEW DIRECTOR-GENERAL

WITH a view to further strengthening and coördinating the emergency medical services, the Minister of Health and the Lord Privy Seal have appointed Dr. J. H. Hebb, C.B., director-general of medical services in the Ministry of Pensions, who is already acting as a principal medical officer in the Ministry of Health to take charge, as director-general, of emergency medical services both in the Ministry and in the Air-Raid Precautions Department of the Home Office.

Dr. Hebb will be assisted by a deputy, Lieut.-Colonel E. T. Potts, C.M.G., M.D., who will act as headquarters officer in relation to medical personnel, assisted as regards nurses by Miss Watt, C.B.E., late matron-in-chief of the R.A.F., who will also be associated with the Central Emergency Committee of Nursing, the body responsible for building up the Civil Nursing Reserve. Colonel Potts has had wide organising and administrative experience as assistant director of medical services at the headquarters of the British troops in France and Flanders in 1919 and 1920, and as assistant director of medical services, General Headquarters of the Army in India, from 1928 to 1933.

Additional hospital officers have also been appointed: Dr. P. H. Oakley (headquarters); Colonel T. H. Scott and Wing-Commander A. J. Brown (London region); Dr. A. E. Tudor Hart (midland region); Lieut.-Colonel C. L. Dunn (north-western region); and Colonel H. T. Bates (north-eastern region).

Lord HARLECH has been elected chairman of the board of management of the London School of Hygiene and Tropical Medicine. He has also become a member of the court of governors of the school.

At the annual meeting of the Coroners' Society of England and Wales held on June 29, Dr. H. BEECHER JACKSON, coroner for Croydon, was appointed president for the coming year. Dr. Jackson, who is also a solicitor, carries on a family tradition, for his father was also Croydon coroner. He conducted the inquest in the famous and lengthy "arsenic case" which attracted much attention a few years ago. The society lost its secretary, Dr. F. Danford Thomas, this year, and he has been succeeded by Dr. W. Bentley Purchase, the North London coroner, with the never-ageing Sir Walter Schröder as assistant secretary. Both these officers have actually been in charge since Dr. Thomas's death a few weeks ago.

SEND-OFF DINNER FOR MEDICAL WOMEN.—Miss Hilary Long and Miss Doris Brown, whose appointment to the Women's Medical Service for India was announced in our issue of June 17, were the guests of honour at a dinner given by the Yorkshire Association of Medical Women on June 26, at which Prof. E. R. Flint and Prof. Matthew Stewart spoke. Miss Long is to be professor of surgery at the Lady Hardinge Medical College, New Delhi, and Miss Brown is joining the gynæcological unit at the college.

SPECIAL ARTICLES

WHAT MEDICINE OWES TO GREEK CULTURE

IT was Sir Henry Lunn's achievement to enable the English-speaking peoples to take a less parochial and insular view of peoples of other lands. On the occasion of his golden wedding two years ago Mr. H. A. L. Fisher spoke of Lunn as an educator and a missionary. You have, he said, rendered a very great service to higher education in this country by enabling so many students of Greek letters to visit the sunlit shores of the Ægean. As chairman of the Hellenic Travellers' Club, Lunn had arranged in the early spring of this year a cruise to the highlands and islands of Greece, including visits to Epidaurus and Cos, giving opportunity for the study of the art of healing as it arose there. His fatal illness on the preceding cruise prevented him from personally conducting this party, which consisted largely of doctors and their families, and from presiding at a series of lectures by medical men who had made a study of various aspects of Greek culture. Prof. J. A. Nixon (Bristol) discoursed with illustrative material on Greek athletics; Prof. G. E. Gask described the cult of Æsculapius and staged a scene from Aristophanes to make it topical; Dr. J. Dixon Comrie (Edinburgh) gave the fruits of a lifelong study of the Father of Medicine; and Sir Walter Langdon-Brown completed the series with a more general study of Greek influence in medicine. The lectures will appear in the Yearbook (1939) of the Hellenic Travellers' Club by whose courtesy we are able to reproduce here the substance of the discourses, along with some pictures collected for the most part on the cruise.

A

B

(A) Statue of Æsculapius, god of healing, in the National Museum at Athens.

(B) Statue of Telesphorus, god of convalescence, in the National Museum at Athens. It was Telesphorus who gave Aristides the healing balsam at Pergamos. The hooded figure with closed lips suggests the silence and secrecy to be observed by the physician.

The Cult of Æsculapius

(PROFESSOR GASK)

Æsculapius, the mythical god of healing, was taught that art by Cheiron, the centaur, and had two sons, Podalirius and Machaon, who fought at Troy and are the supporters of the coat of arms of the Royal College of Surgeons. His cult spread over Greece and the islands as far as Asia Minor and Rome. Hundreds of temples, called æsculapia, were erected to him (often in association with Hygeia and Panacea), the most important being at Epidaurus, Athens, Cos and Cnidos. The chief item in the ritual was incubation—i.e., the patients slept in the temple to have healing dreams. This was done after purification and sacrifices. During the incubation harmless sacred snakes crawled among the patients and licked their sores. The importance of these snakes is shown by what happened during the plague in Rome in 292 B.C. After consultation with the Sibylline books an embassy was sent to Epidaurus for help and brought back one of the snakes. As they were sailing up the Tiber, the snake slipped overboard and swam to what is now the island of San Bartolomeo. This was regarded as a sign that a temple to Æsculapius should be built there, and the island was given the form of a trireme to commemorate the voyage. When the river is low, remains of the ancient stones can still be seen, together with what probably is a representation of Æsculapius. There is still a hospital on this island and tradition says that here, about A.D. 1120, Rahere lay sick with a fever and dreamt that he would be cured if he built a hospital on his return to London. So one may amuse oneself by thinking that there is a connexion between St. Bartholomew's Hospital in Smithfield and the old healing gods of Greece.

Common Seal of the Royal College of Surgeons of England. Supporting the armorial bearings are the two sons of Æsculapius: Machaon holding a broken arrow and Podalirius with a staff entwined by a serpent.

Though the cult had such a vogue, the subtle-minded Greeks could laugh at it, and it was the subject of one of Aristophanes's comedies the "Plutus," which is thought by scholars to give a good description of what went on in a temple of Æsculapius. The next reliable information comes from the "Sacred Orations" of Aristides in the second century A.D., when, in addition to the previous ritual, the treatment included dieting, bathing and exercise. Aristides was given prescriptions, such as balsam, to be used on leaving a hot bath for a cold one; on a cold frosty night he had to rub himself with mud, run three times round the temple, and wash himself in the well. There is no evidence that any serious medicine was practised at these temples, and some of the old paganism became attached to the Christian religion.

Photo G. H. Ward.

The abaton or sleeping-place in the æsculapium at Pergamos. The row of broken marble columns once supported the roof, the spaces between them leaving the patients open to the distant view and to the visit of the healing snake.

Thus St. Cosmas and St. Damian were reputed to have miraculous healing powers, and incubation was practised at their shrines; at certain seasons crowds of sick still frequent the church at Ayassos on the island of Mytilene, sleeping in the church or its courtyard.

The island of Cos, the birthplace of Hippocrates, is the site of a very famous æsculapium, and it is believed by many that Hippocrates received his training and derived his inspiration from it—a belief that is probably incorrect, for there is no taint of magic or superstition in his teaching. Further, all the available archæological evidence suggests that the æsculapium at Cos was not established until after Hippocrates's death.

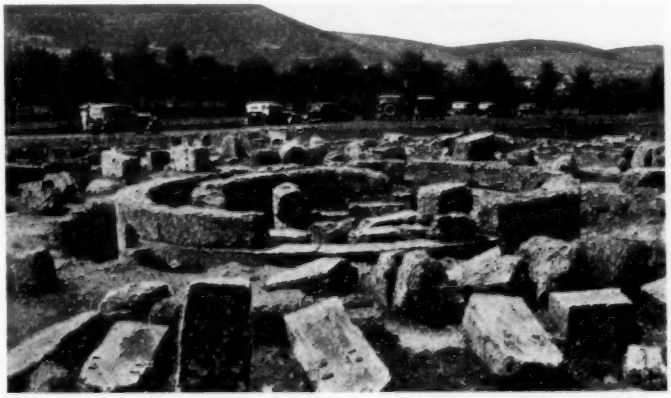
Hippocrates

(DR. COMRIE)

Hippocrates is said to have been born in Cos in the year 460 B.C., the son of a physician named Heracleides. He was trained in medicine first by his father in Cos and later in Athens, where he spent most of his life in the practice and teaching of medicine. Nevertheless he travelled much and visited Thessaly, Thrace, Macedonia, and possibly Scythia. On one of these journeys he died at Larissa, in Thessaly, probably about 375 B.C. at the age of 85.

The Hippocratic writings, on which the fame of Hippocrates rests, consist of about seventy works dealing with very different topics, theoretical and practical. Some give clear-cut pictures of disease with the appropriate treatment; others are mere notes intended perhaps as headings for a course of lectures. Some are perfectly simple and easy to follow; others are confused and barely intelligible. All are in the Ionian dialect, but internal evidence shows that they were composed by different writers at different periods. Among them, however, stand out about a dozen which bear the stamp of genius; these indicate an author with great power of observation, clarity and simplicity of exposition; they have been recognised by authorities as the genuine works of one man, who is assumed to have been Hippocrates. Those treatises, regarded as the genuine work of Hippocrates and translated by Francis Adams for the Sydenham Society in 1849, include "On Ancient Medicine," "On Airs, Waters, and Places," "On the Prognostics," "On Treatment in Acute Diseases," "The Epidemics" (books I and III), "On Injuries of the Head," "On Surgery," "On Fractures," "On the Joints," "On Setting Joints by Leverage," "The Aphorisms," "The Oath," "The Law," "On Ulcers," "On Fistulæ," "On Hæmorrhoids," and "On the Sacred Disease" (epilepsy). It has been suggested by W. H. S. Jones that the whole collection of "Hippocratic writings" formed the library of the Hippocratic school of medicine at Cos. These works have passed through the hands of a host of commentators, of whom the greatest was Galen (second century A.D.). The earliest commentary that has survived (as a tenth-century MS.) is that of Apollonius of Citium (*ca.* 100 B.C.). The earliest MS. of Hippocrates now extant is a ninth-century codex of the Laurentian library.

The fundamental principle of Hippocratic treatment was that the cure must be effected by nature, and that the best the physician could do was to see that nature got a chance and to assist the natural cure. The remedies were chiefly purgatives and febrifuges; 236 plants are mentioned in the Hippocratic writings. Great emphasis was laid on prognosis ("in this way you will justly win respect and be an able physician"). The importance of Hippocrates is that he first separated rational medicine, as practised by the members of the Asclepiad guilds, from temple medicine, conducted by the priests. The critical Athenian mind had already begun to see through the impostures of the priests, as shown by



[*Photo G. H. Ward.*

The tholos, close to the æsculapium at Epidaurus, where the sacred snakes were kept. It is arranged in concentric circles, the outside one 30 ft. in diameter, and is 12 ft. deep. Note the marble seat for the attendant.

Aristophanes in his "Plutus." Hippocrates insisted on the complete banishment of superstition and on the rational treatment of all diseases instead of by ablutions and incantations, as if they were inflicted by the gods. This attitude is clearly defined in his treatise on epilepsy: "It is not any more divine or more sacred than other diseases but has a natural cause, and its supposed divine origin is due to men's inexperience and to their wonder at its peculiar character."

Greek Athletics

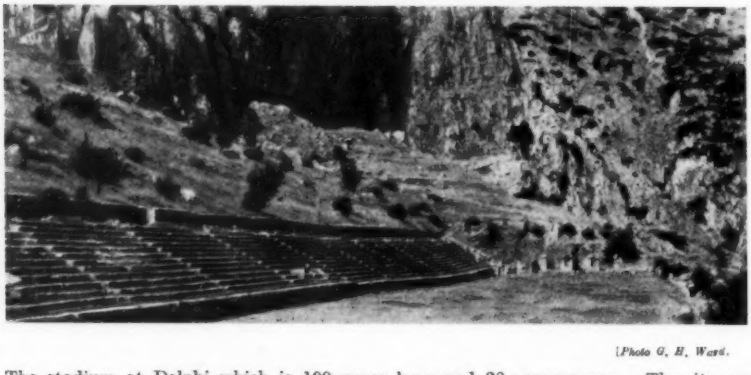
(PROFESSOR NIXON)

In no country have athletic sports attained the same degree of national importance as in Ancient Greece. The games festivals, although not consciously instituted for such purposes, soon came to serve two great objects: first, they promoted physical fitness and dexterity in martial exercise; secondly, they led to frequent assemblies of the inhabitants of all the states of Greece, thus favouring national unity. Even states at war with one another suspended hostile operations during the games. Competitors and spectators could travel safely to the festivals, and no warlike weapons were allowed to be brought into the sacred precincts. The great athletic celebrations, such as the Olympic games, must have developed slowly from the funeral games, such as those described by Homer as having been held in honour of Patroclus, at which all the contestants were given prizes as memorials of the dead. In later times all competitors at Olympia underwent thirty days' training at Elis under the supervision of the Hellanodicæ, who themselves underwent ten months' training in their duties. The training was severe, absolute obedience being enforced, when necessary, with the rod. The Hellanodicæ tested the athletes, rejected the unfit, and graded the entrants in age-groups, after satisfying themselves of their parentage and claims to compete. The earliest extant records of the games concern the 28th olympiad of 776 B.C. (each olympiad being a period of four years).

Down to the end of the sixth century B.C. the athletes were amateurs and the Greeks were truly a nation of athletes. Their training was natural, elaborate rules for exercise, diet and sleep not yet having been introduced. But the typical athlete of the sixth century was the strong man—boxer, wrestler, or pancratiast. In the fifth century B.C. specialisation had not yet begun; the best athlete was an "all-rounder," and artists and sculptors set up a standard of physical beauty. Style and grace in athletics were more admired than mere strength. This love of beauty checked the growth of specialisation and the encroachment of professionalism. But specialism came in with the advent of professional trainers. Athletes were selected and trained for particular events. The new training concentrated on particular exercises calculated to develop limited groups of muscles, with the result that in the statues and drawings of these later athletes different physical types can be recognised as adapted for different sports. From the professional trainer it was but a short step to the professional athlete, and with his arrival amateurs retired from the competitions. Training for athletics ceased to be a useful training for war, and complaints to this effect were heard: Epaminondas declared in the fourth century that fleshy boxers and pancratiasts were of no use as soldiers and dismissed them from his army; Philopoemen, two centuries later, refused to cultivate his natural gift of wrestling, saying "better wrestler, worse soldier"; and Galen, in the first century A.D., although he thought highly of bodily exercises, opposed athletic training, saying that the health of athletes was most deceptive and precarious and their strength of no use for practical purposes. At the time of the Peloponnesian wars in the fifty century B.C. the mass of the people were no longer athletic, although they were eager spectators at the professional competitions. Nevertheless the ideal of physical fitness was firmly implanted in the Greek mind, and it was held that the fitness of the body had an important effect on the character and the mind.

[Photo G. H. Ward.

The plane-tree in the market-place at Cos under which Hippocrates is said to have sat and seen his patients. It is certainly a very old tree.



[Photo G. H. Ward.

The stadium at Delphi which is 190 paces long and 28 paces across. The site was too steep for chariot racing which took place in the valley far below.

In modern times there has been a revival of the cult of physical fitness; yet we are not sure what constitutes a state of perfect fitness—still less how we may achieve it. Some seek it through exercise and still more exercise; but the effects of athletic exercises show us that it is not given to everyone to develop skill in games, however much he may practise. A more rational spirit is

entering into the search for physical fitness. World-wide inquiry is being made into its physiological and psychological foundations. Good food and healthy conditions of living are being recognised as no less important than muscular exertion.

Greek Influences in Medicine

(SIR WALTER LANGDON-BROWN)

The eternal youth of Greek thought, although at times buried for centuries, has at intervals burst forth to the surface like a stream to refresh the deserts of scholasticism and to sweep away outworn traditions. If the virtues of the Greek spirit are those of inquiry, moderation, reason and freedom, its vice was that of uncontrolled speculation, as best exemplified in Plato's "Timæus," which gives a complete design for the universe, including an inverted conception of evolution—the descent of animals from man. Such teleology undoubtedly hampered the progress of science, since it was eagerly adopted by the authoritarian spirit of the Middle Ages. The main stream of Greek thought disappeared underground when Justinian I closed the school of Athens in A.D. 529. Before this happened, however, Rome had constructed an aqueduct which diverted much of the stream to herself, and in the reign of Marcus Aurelius the famous Galen was the great exponent of Greek medicine. After him all scientific inquiry seemed to pass into outer darkness.

(From E. Norman Gardiner: Greek Athletic Sports and Festivals. Macmillan & Co., 1910

Pan-athenaic amphora showing four amateur runners reaching the turning point. It illustrates the correct (alternate) attitude of limbs as early as the sixth century B.C.

Perhaps the seventh century was the darkest of all. Such light as still shone was provided by the Arab school. In the twelfth century medicine, based on the teaching of Averroes, was by far the chief faculty of the school of Salerno, and for several centuries Salerno stood almost alone in its rational methods and in its conservation of Greek and Latin treatises. Early in the thirteenth century Frederick II, who was keenly interested in science, insisted on the students there, after a preliminary study of logic, dissecting corpses (which he had no difficulty in supplying), combining this with clinical work and the reading of Hippocrates and Galen. Students were not granted appointments until they had practised a year beside an experienced physician. Unfortunately Frederick's quarrels with the papacy greatly hampered his educational reforms and when he died in 1250 theological fetters were bound more firmly again on the growing mind of the thirteenth century. A hopeful dawn ended in the twilight of the Black Death.

Thus we approach the second phase of the Middle Ages, in which authority was felt to be necessary for the stability of Europe. The spirit of domination spread to science with disastrous results. The Dominicans decided to abstain from the study of physical and medical science and are represented on the walls of the Spanish chapel in Florence as the dogs of the Lord (domini canes) trampling on Averroes, the sole link between ancient and modern medicine. The only thing that saved medical science during the next two centuries was surgery, which the physicians tried hard to suppress, with the result that medicine lost touch with facts and the physician too proud even to examine his patients, deprived his brain of the subtlest machine in the world—the human hand. The stream of Greek thought seemed now not only to be contaminated but also to have become stagnant; yet good came out of evil when the capture of Constantinople by the Turks in 1453 set free far more abundant original Greek literature. The new learning was spread by the new invention of printing. The Renaissance came to Cambridge in the person of Erasmus, who established there the study of Greek. He was accompanied by John Siberch, founder of the first printing-press to be set up in Cambridge, who published Thomas Linacre's commentaries on Galen.

Thus the Greek tradition was revived by Linacre, the father of academic medicine in England, who also induced Henry VIII to found the Royal College of Physicians of London in 1518 and established lectureships at Oxford and Cambridge in 1520, which stimulated Henry to create regius chairs at those universities in 1540. With such a splendid start it is disappointing to discover how little was achieved. This was because the new learning was simply an authoritarian exposition of the old medicine. The regius professors merely read the corrected versions of the writings of Hippocrates and Galen, and no attempt at new observations was made. Men like Caius and Harvey still had to go to Padua for their medical training. It was not until Harvey introduced the new method of experiment that a real change came. He had been influenced by Bacon's method of inductive reason, and Bacon in his turn by the physical experiments of William Gilbert, president of the Royal College of Physicians in 1600. Thus observation, reasoning and experiment entered into medicine and replaced mere authority. But the clinical application of the method of strict observation was due to Sydenham. It is interesting to note the sequence of the new ideas: first Gilbert's physics; then Harvey's anatomy and physiology; and then Sydenham's clinical observation—a genealogical tree of medical science which the student of today has to climb in his first, second, and third M.B. examinations.

Each of these revivals of medicine through the rediscovery of Greek thought was a conscious return, but the modern return to certain features of the Æsculapian cult has been unconscious. As early as 500 B.C. Alcmaeon had insisted that "health depends on harmony, disease on discord, of the elements within the body." We are now prepared to regard disease as the sum total of the uncomfortable reactions (dis-ease) of a patient to some perturbation in his external or his internal environment—possibly in both. Thus an anxiety neurosis and a bacterial infection are equally diseases, but the form of the reaction is largely determined by the make-up of the patient. In Mohr's words: "There is no such thing as a purely psychic illness or a purely physical one, but only a living event taking place in a living organism." So we find ourselves, after twenty-five centuries, standing where Alcmaeon stood.

Cleanliness, fresh air, analysis of dreams and psychological explanation were the cardinal tenets of the Æsculapian cult, and all of them were lost by medicine until recently. Today we have returned to the cult of Æsculapius and are his faithful disciples.

Watching the ebb and flow of the tides of Greek influence through the centuries provokes a sombre reflection. If the Middle Ages considered truth to be static, we believed liberty of thought and the right of free investigation to have been permanently established. With something of a shock we have had to realise that the price of liberty, even liberty of thought, is eternal vigilance. We see cause to dread what H. G. Wells called "the incursion of the clumsy lout." This century may have adopted as a slogan "Propaganda is more powerful than truth," but we must never bow the knee to a Baal that would make natural science into national science.

PARIS

(FROM OUR OWN CORRESPONDENT)

OLD-AGE PENSIONS FOR DOCTORS

WHEN M. Pomaret some years ago proposed compulsory retirement at 65 for members of professions, sharp protests were made by lawyers, doctors, and engineers. Owing to lack of funds the scheme was dropped; but a new scheme has been planned, again sponsored by M. Pomaret, but this time with the collaboration of Dr. Cibrie, secretary of the *Confédération des Syndicats Médicaux Français*, which represents 21,000 doctors out of about 27,000 in France. It embraces the whole profession on an insurance basis. The premium paid by the doctor would be compulsory during the whole of his time in practice, but the age of retirement would be optional after 65.

The premium would be about 3000 francs a year, with a diminishing reduction during the first years of practice and a progressive reduction after 60. The monthly income, starting at 1000 francs during the first years after the scheme comes into force, would later rise to 2000 francs or more. A clause has been inserted to safeguard against possible alterations in the value of money. Only half the annual premiums would be capitalised, the other half being shared each year. Provisions have been made for widows and children.

The plan has been accepted by the majority but is criticised sharply by a strong minority, who think that the pensions freely subscribed by ancient professional corporations are better from both the financial and the ethical standpoints. The present plan, which falls in with the social ideas of most politicians, has every chance of being passed by both chambers.

NEW LUNACY BILL

The confinement of lunatics is governed in France by a law of 1838 which has never been changed. Since 1870 eleven attempts have been made to modify it, but each time the intended improvements proved to be worse than the old law. A new bill, which has just been passed by the chamber of deputies, keeps nearly all the items of the 1838 law but introduces the principle of voluntary admission and legalises the status of the "free insane hospitals" to which patients are admitted without being certified. The first example of a hospital of that kind, the Hôpital Henri-Rousselle, was founded by Dr. Toulouse shortly after the late war.

A recent decree changing the name of the *asiles d'aliénés* to *hôpitaux psychiatriques* has given much satisfaction to those who have long been trying to get the public to regard insanity as mental disease and not a disorder of conduct.

"CARNET SANITAIRE"

M. Rucart, minister of public health, has introduced the use of a book (*carnet sanitaire*) intended to record the medical history of its owner. It is given free by municipal authorities at the birth of a child. At schools and hospitals it is given or sold according to the private means of the person concerned. No name is written on the book but only a number referring to a register held by the distributors, so that, if lost, it can be returned to its owner without breach of confidence. At present the booklet has commended itself more to the sanitarian than to the private practitioner whose interest it was hoped to elicit.

FIRST STAGE OF GASTRIC CANCER

Dr. R. A. Gutmann, consulting physician for gastro-enterology in Professor Gosset's surgical clinic at the Salpêtrière, has evolved a method of early diagnosis of cancer of the stomach by a close confrontation of clinical study, therapeutic tests, and radiography. In his recently issued book he publishes cases in which the surgeon at operation could palpate nothing abnormal and hardly anything abnormal could be seen on the open viscus by the naked eye, but microscopy alone proved the diagnosis. Professor Gosset claims in the preface that this work is the first to be published on the initial phases of gastric cancer.

Dr. Eisendrath, of Chicago, has died in Paris, where he had lived since the war. He was consulting urologist at the American Hospital in Paris and much appreciated by the American colony.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

MALNUTRITION

IN an address to the tenth annual convention of the New York State Dietetic Association, Dr. Frank G. Boudreau reviewed the evidence of inadequate nutrition in the United States. It was found in investigating an outbreak of scurvy in Maine, he said, that half of the 4000 children studied had had no milk for two years. The blood ascorbic acid was estimated in 95 children and 66 of them had less than the normal concentration and 44 had less than 0·5 mg. per 100 c.cm. Of 155 children admitted to the Toronto Hospital for Sick Children, only 16 per cent. had ascorbic-acid levels believed to be consistent with good health.

Nutritional œdema, due to deficiency of protein, is found in 15 per cent. of patients admitted to a large Georgia hospital, while 35 per cent. of these patients have nutritional anæmia. Last year, Dr. Boudreau said, there were at least 100,000 cases of pellagra in the South. He referred also to a dietary survey of low-income families in Toronto which showed that "on the average the diets of the women and children were deficient in every important ingredient including total calories." The explanation

of the deficiency in calories is not that people cannot buy enough bread and sugar but that the type of diet which they are able to afford is unappetising. In urging the needs for a well-organised programme of improved nutrition, Dr. Boudreau said "we are beginning to appreciate that the effects of nutritional deficiency are more serious and permanent that we had believed, and on the other hand that the benefits of an abundantly adequate diet are greater than we had any reason to expect."

VALUE OF ROUTINE RADIOGRAPHY

In 1932 Mills and Stewart [1] tested 353 patients in the Swedish Hospital in Minneapolis with the intradermal tuberculin test and then examined the 67 positive reactors radiologically. Of the full number tested, 1·4 per cent. were found to have reinfection type tuberculosis. In 1935 Hodges [2] made a survey of 1101 consecutive admissions to the Michigan University Hospital or to its outpatient clinic during a period of a fortnight, and found that 1·3 per cent. of the patients had significant chest disease and 0·5 per cent. pulmonary tuberculosis which would have been undiscovered without radiography. These results were quoted by E. X. Mikol and R. E. Plunkett in a paper read to the American Sanatorium Association in Boston on June 26. They had remarked that some 10 per cent. of the deaths from tuberculosis in upstate New York in 1936 and 1937 took place in general hospitals which had no special provision for the care of tuberculous patients. Of the deaths from pulmonary tuberculosis, which comprise nearly three-quarters of the group, no less than 61 per cent. had not been recorded as cases of tuberculosis at the time of their death. It was thereupon decided to make a survey of a random sample of the hospital population of New York state. Each hospital was allotted a number of X-ray films varying from 250 to 500 according to the number of admissions and was requested to make a single flat film of the chest of every patient 15 years of age or over admitted, excluding only those known to have tuberculosis, those admitted to a tuberculosis service, outpatients, and those too acutely ill to be disturbed. Due to unforeseen administrative problems, consecutive X rays were found to be impossible, but Mikol and Plunkett believe that this fact has not seriously affected the unselected nature of the sample.

Of 4853 films studied, 2·6 per cent. showed evidence of reinfection type of tuberculosis; 1·1 per cent. showed radiological characteristics of clinically significant tuberculous lesions and in 6 additional cases indications of significant tuberculosis were found but the diagnosis could not be confirmed because the patients had been discharged. Of the 51 clinically significant cases, 24 had been regarded as suspicious by the visiting staff. However, in 27 cases, or 0·6 per cent., the radiogram provided the first suggestion that the patient might have tuberculosis. Applying this figure of 0·6 per cent. to the adult admissions to hospitals throughout the whole United States for the year 1937 an estimate of 40,000 cases of pulmonary tuberculosis is reached. The potentialities of reinfection both of the hospital staff and of other patients is the first practical lesson to be drawn from this research. The authors also draw attention to the possibility of utilising the general hospital as a medium of case finding in tuberculosis, and finally they point out that routine radiography is of value in disclosing non-tuberculous thoracic conditions.

1. Mills, W., and Stewart, C. A., *Minn. Med.* 1933, **16**, 122.
2. Hodges, F. J., *Ann. Intern. Med.* 1936, **9**, 1639.

MEDICINE AND THE LAW

The Defence of the Split Mind

A LEGAL contemporary expresses the misgivings of the legal profession over the defence of schizophrenia in criminal trials. Its comments are made in connexion with a recent prosecution at Nottingham assizes. A boy named Hayter joined the army when 16, giving his age as 18. At the age of 20, being a private in the Royal Army Ordnance Corps, he set fire to stores and tyres at the Chilwell depot, causing damage to the amount of £36,000. There was no suggestion that he was connected with any subversive movement. Dr. J. H. Murdoch, the medical officer at Lincoln prison, who attributed Hayter's act to the conditions of the "split mind," said that the accused felt that the social system of the country was not as it should be and he desired to register a protest against it; he needed care and control. The judge sentenced him to detention in a Borstal institution for a period of three years, adding the philosophic reflection that he wondered what would have happened to Hayter in some other countries if he had there done the damage which he did at Chilwell.

The legal journal to which reference has already been made asks how far the defence of the split mind is to go. The recently convicted members of the I.R.A., it observes, might also claim to justify their actions on the ground that things are not as they should be and that a man must make his protest. The lay press evinces a little interest when an accused person can be described as another case of Dr. Jekyll and Mr. Hyde. Barristers who must find something to say in mitigation of sentence are grateful for any material. Any young man who is fed up with the discipline of the army and who occasionally feels impelled to kick over the traces may be comforted by the attribution of his wayward impulse to some high-sounding scientific cause. But schizophrenia has not yet made much headway with the bench, even though it may be studied in the prison.

THE LANCET 100 YEARS AGO

July 6, 1839, *p.* 553.

A quotation from William Heberden.

"The deference which is sometimes required in physic to the authority of the ancients, would incline any one to suspect that the improvements in the art of healing had not kept pace with those which have been made in other branches of natural knowledge. Philosophers have long ago thrown off Aristotle's tyranny; yet some physicians still choose to wrangle about the meaning of the ancients, rather than to consult Nature herself. Are they afraid of approaching her immediate presence, without making use of the intercession of Hippocrates and Galen? And is that reverence to be still paid to her once faithful ministers, which is properly due to Nature alone, notwithstanding all that Bacon, and Harvey, and Newton, and our other great reformers have witnessed against this mistaken veneration? In works of genius the ancients are unquestionably our superiors and best patterns; but in that sort of knowledge which depends wholly upon experience, the latest writers must in general be the best. Experience may, in politics and morality, be called the teacher of fools; but in the study of nature there is no other guide to true knowledge: accordingly the practice of physic has been more improved by the casual experiments of illiterate nations, and the rash ones of vagabond quacks, than by the reasonings of all the once celebrated professors of it . . ."

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A WOMAN PUBLIC-HEALTH OFFICER

II

LIKE Their Majesties and Christopher Columbus, and several of my predecessors in these pages, I have travelled to the New World and found it good. Though my voyages made less stir than those of some of the above-named, I doubt if any of the travellers enjoyed themselves more. Believe me, the best way to visit a new country is to have good enough official and social introductions to open the door to anything you want to see—and yet to be sufficiently unimportant to slip off "truly exploring" by yourself whenever the mood takes you. Only thus can one hope to include both the Great Ones of the Earth and the "nice people, with nice habits, but no money at all" who constitute the bulk of humanity.

My journey to the States as the guest of a great philanthropic trust fund began rather inauspiciously in Canada. I nearly disgraced myself by saying to a learned professor, introduced as a "follower of Dr. Watson": "I'm so glad to meet another Sherlock Holmes fan over here"—fortunately this was mistaken for an example of English humour, but in sober truth I had underestimated the importance of the Watsonian school of psychology. Later one learnt better. . . . In Toronto one found an extremely well-organised system of public-health and psychiatric services, which I mention because the English medical visitor often misses them. Here also is a remarkably interesting court—unique, I believe, in the British Empire, for it is presided over by a woman judge, and a doctor not a lawyer at that. Her jurisdiction seemed to include all crimes except murder and treason, and she dealt with all delinquent women and children, all men charged with offences against women or children, and men who misguidedly got a woman pal to assist when "on a job." Never have I seen such a ruffianly clientele in any court—during a morning spent beside the judge on the bench one learned quite a lot. . . . In the train that took me over the U.S.A. border an innocent query to the conductor brought the pitying question: "Say, sister, where are you from?" "From London." "You must sure mean London, *England*, or you wouldn't be so ignorant." (I'd forgotten London, *Ont.*) That's a good line for a British visitor to remember. . . .

* * *

One has almost forgotten that in 1927–28 the U.S.A. were enjoying a marvellous boom period. What a joy after the gloom of post-war England to see a country bathed in material prosperity! It was like watching children at a really good Christmas party. Even the women prisoners in the night courts had better fur coats than I, the working men had splendid food and decent little homes, and, best of all, the young had justifiable hope in their hearts that the world had a use for them and their labour; nor were the standards wholly material, for I can swear to an immense communal feeling, a passionate desire for education, and a real love of beauty and culture. One saw museums fit to enshrine great masterpieces of art, hospitals that towered to the sky, and millions poured out in charities. And, if much of this wealth has vanished like fairy gold, America can at least remember that she used her money not ignobly when she had it—and would do so again.

A fly in the ointment was the comprehensible but maddening incapacity of certain of my hosts to understand why so many English workers perversely persisted in being unemployed. Less excusable was the way in which many highly placed British visitors played up to this attitude and left a trail of disgusting slanders on the broken men of the Clyde, the Tyne, and South Wales. I caught one at it in Chicago and can only regret that he escaped—though narrowly—with his life.

The work in child guidance that one had specially come to see had flourished apace in the general prosperity. Nothing lends itself more to sheer quackery or to humourless extravagances than does "psychology," especially when applied to children. Examples were not far to seek, but the clinics to which we were shepherded by our hosts of the Commonwealth Fund were for the most part as austere as they were costly. Only the best in the way of academic qualifications and scientific methods were good enough for the "maladjusted" child, and the whole scheme was organised with a quite uncommon common sense. Had we anything to learn from them? our hosts asked modestly. Definitely we had. And they have given since with both hands that Great Britain might reap the benefit of American ideas and experiences.

* * *

Although in 1927 the word "depression" meant less to the average American than "hang-over," there were plenty of snags in the stream of prosperity. One of them was the eternal problem of the "melting-pot." No amount of reading or intensive study of the movies prepares one for the reality. Wait till you see those hordes of strange flat-faced industrial workers—from countries that one never heard of till Hitler taught us Central European geography. Wait till you drive along a three-mile avenue in Chicago and look in vain for a white face on the crowded side-walks. Or come and scan the long charge-lists in the juvenile courts with their patronymics drawn from half the races in the world. Then you may begin to understand the difficulty of tackling any social or political question in such a composite nation. . . . And yet it is a nation. . . . Jane Addams (one of the great people who didn't disappoint) showed me maps which demonstrated how the racial constituents of her neighbourhood in Chicago had completely changed three times in her lifetime. (The races in America tend to live together in agglutinated masses, and where the edges touch crime and discord are rife.) Now in 1927 had come a new wave, a horde of Mexicans imported as cheap labour for the then booming industries. I was asked to help at an "Americanisation party" for them and found it very different from the flag-wagging affair one had supposed. The very shy older people, who were with difficulty coaxed in from the street, were given their favourite foods and drinks, and once wreathed in smiles were invited to show what they could do in the way of native handicrafts, folk-songs, and cookery. Far from being

hastily mechanised they were encouraged to pass on their native culture to their own children, to enrich the American heritage. "It's a shock to most of these poor undervalued folk to learn that they have anything worth while to give us," said Miss Addams. "Heaven forgive us, we've only just realised it ourselves." . . . The main trouble very often is to persuade the European peasant to give enough freedom to his American-born child—and to persuade the child that even a foreign-speaking mother sometimes knows best. From the clash comes a great part of American crime.

Certainly the American child, if tough, can be very tough. A boy on remand was expounding to the court psychiatrist the mysteries of the Forty Club, whose initiation test was—and perhaps still is—to steal a car of a greater value than a Ford. "Why the *Forty*," he was asked. "Aw, sap! Where was you riz? Never heard of Ally Babba?" We—the psychiatrist and I—duly found the headquarters of the Club that night in a squalid side street with costly cars parked round the door to witness that the young neophyte did not lie.

Not less baffling was coloured Sadie, aged 8 plus, with two pigtails, great innocent eyes, and an appalling record of varied misdeeds. Angelic at first, she became very naughty during a psychological test, and the doctor mildly remarked that he would hate to see a little girl of his own behave like that. "Yo go home and hand dat stuff to yo wife," she shot out at him. Seeing that my presence was unwelcome, I left the room and learnt later that Sadie immediately sidled up to the doctor, thrust a pencil into his hand and begged "Now, yo play a game wid me!" The doctor wisely asked further details—"See which of us two's can writ down de mos' bad wojds. Ain't dat a *cute* game?" . . . One doubted whether a team of professors of psychiatry and psychology, even if reinforced by an old Nannie with a slipper, could deviate Sadie from her appointed path through life.

* * *

The chief difficulty, however, with which child-guidance clinics had not infrequently to contend was a certain sketchiness in the ethical standards of the community in which they worked. Children are not fools; they watch what their elders do rather than what they say, especially if the deeds rather than the good advice accord with their natural instincts.

At one clinic I visited it appeared that a large adjacent building was used as an illicit brewery (under Prohibition) and as a depot for stolen motor-cars. The doctors or social workers while examining their little charges (accused perhaps of stealing a few cents) could watch a highly skilled gang of negroes dismantling the stolen cars. One day a magnificent Hudson Super-six was driven in, and the psychiatrist could bear it no longer. He telephoned the police, who took over an hour to arrive—and then could find no car on the premises. Later he learned from amused colleagues that the whole place belonged to one of the highest officials in the city. The doctor told me he meant to quit. "I can't make sense of it all. . . . I wonder if the kids can . . ."

This really tragic (though diminishing) factor in the American scene did bring home the importance of encouraging decent people to do the drudgery of public administration—and of not crabbing them too hard when they are at it. I can never hear the stock sneers against Parliament and municipal bodies without wishing the critics could get the administration they are really asking for. If there is no tradition that honest men should give this kind of public service, and if the supply of honest men slackens, then crooks come into their own. And if public office once gets a really bad reputation decent men dare not take it. From this vicious circle America is struggling hard to extricate herself.

PANEL AND CONTRACT PRACTICE

Unwise Comment

A CASE heard before the London medical service subcommittee shows how careful hospital officers should be in criticising, however mildly, the treatment given by doctors outside. A man had been treated by his insurance practitioner on many occasions for rheumatism, lumbago and the like. Last December he went to the doctor and was diagnosed as suffering from sciatica, for which he was treated first with medicines and then for a fortnight with electricity at a clinic. A few days later the doctor visited him and found him to be suffering from bronchitis, the leg being rather better. Under treatment the bronchitis improved but the pain in the leg became worse, and the doctor suggested admission to hospital. After about a week he was admitted, and the condition was there diagnosed as right-sided femoral thrombosis. The man's own story was that on his admission his leg was swollen from foot to thigh, and that the hospital doctor told him that the ointment which he had been applying, which had been prescribed by the insurance practitioner, was useless for the treatment of that condition. In a letter to the insurance practitioner the hospital authorities said they were unable to determine whether the man's sciatica had any relation to the thrombosis.

The insured man and his wife complained to the committee that the practitioner had been negligent in his treatment in that he had wrongly diagnosed the condition present, but the committee found that the treatment provided by the practitioner was proper and adequate for the condition which he diagnosed, a diagnosis which was fortified by the previous medical history. They expressed regret that the man had been told on admission to hospital that the treatment given was not suitable, and they were doubtful whether any question would have been raised if this remark had not been made.

The period between the man's first visit to the doctor and his admission to hospital was just over two months, and clearly thrombosis was not present for all that time. While the practitioner may not have diagnosed the new condition—and he said quite frankly that he did not disagree with the hospital opinion—it would be intolerable if practitioners were held guilty of negligence merely because they made a wrong diagnosis. All that any doctor can be expected to do is to apply "reasonable skill and care in the treatment of his patients" and this is all that the regulations require of him.

Contraceptives

In answer to a question about the position of insurance practitioners who are asked for advice about contraceptives, the insurance acts committee of the British Medical Association have expressed the opinion that if the condition of the patient is such that the practitioner should give contraceptive medical

treatment or advice, such treatment or advice would be within the scope of his agreement.

Essex Public Medical Service

The report for 1938 shows that this service is making steady progress. The number of subscribers has now risen to 21,000, an increase of nearly 2000 over 1937, and the increase would have been larger still but for the number of fourteen-year-old subscribers who came off the books owing to the extension of national health insurance. The great distress that is prevalent in parts of Essex owing to the slowing down in the building trade also led to many cancellations. The number of active medical members of the service is 305. No distinction is now made in rates of subscription between adults and children, the weekly payment, which includes drugs and administration, ranging from 4*d*. a week for one person to 1*s*. 3*d*. a week for a family of six. The service has no difficulty in paying its way and showed a surplus of £650 for the year, most of which will be distributed to members as a bonus.

A Record Quarter

During the first quarter of this year the number of prescriptions issued by insurance practitioners in London reached the record figure of 3,015,846, costing £101,661, as compared with 2,571,840, costing £87,091 in 1938. The increase was partly due to a rise of some 43,000 in the number of insured persons, but the average cost per person also rose from 11·20*d*. in 1938 to 12·78*d*.

PUBLIC HEALTH

Another Side of the Defence Programme

THE Prime Minister and the Minister of Labour have expressed natural pride in the results of the physical examination of the militia recruits. These suggest, no doubt, that our social and health services have been developing along sound lines, and are a testimony to the merits of preventive medicine, though the possible fallacies of this deduction are considered in a leading article on another page. There is, however, another aspect of the problem. Medical practitioners are becoming increasingly conscious of the effects of the emotional side of life on physical and mental health. Anxiety states are becoming commoner in young people, and illness may sometimes be an unconscious escape. In other cases there are restlessness and irritability, if not actual misdemeanours, with unfortunate effects in and outside the home. Some of this may be an inevitable result of the increased momentum of modern life, with its accompaniments. World conditions also tend to increase any feeling of insecurity or fear that is present. Parents in the past have seldom been adequate guides to their children on the so-called facts of life, and today there is a changed relationship between them. Something has been gained by the change, but much has been lost, and helpful counsel has too often accompanied discipline in its flight. The freedom of modern youth is exercised in an atmosphere of sex stimulation greater than ever before, and though the course of the whole life is usually determined in the unstable years of adolescence any preparation and guidance for these critical years of adjustment have been almost left out of our educational system.

The deputation of youth leaders last month to the Minister of Health and the President of the Board of Education was anxious to see something more being done to give help and guidance, and to prevent the physical and nervous casualties which present conditions make only too easily. They were able to show that the years from 14 to 25, in addition to juvenile delinquency, produced most cases of illegitimacy and venereal disease. It was further disclosed that of four million young people between the ages of 14 and 18 less than three-quarters of a million were within the influence and care of the youth organisations. The deputation expressed a fear that emergency conditions might slacken self-discipline and self-control, and their plea was for the Government departments concerned with health and education to grapple with this part of a real defence programme. Sir Walter Langdon-Brown (chairman of the British Social Hygiene Council) and Dr. Vynne Borland (Society of Medical Officers of Health) spoke of the need for an adequate preparation for life. This means instruction for parents, more and better biology in schools, and simple scientific and psychological information for adolescents about themselves and also concerning their responsibilities as future citizens and heads of families. Where these things have been done their value has been proved. Local authorities can provide these services; some of them do, but many do not. Insurance committees can also help. Government stimulation of local effort is desirable, but these services are being curtailed by lack of funds. We trust the deputation was successful in convincing ministers that money so spent would be a defensive investment.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 24, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1597; diphtheria, 783; enteric fever, 54 (29 "expected"); pneumonia (primary or influenzal), 520; puerperal pyrexia, 186; cerebrospinal fever, 20; acute poliomyelitis, 12; encephalitis lethargica, 3; dysentery, 43; ophthalmia neonatorum, 87. No case of cholera, plague or typhus fever was notified during the week.

Twenty cases of enteric fever were reported from the county of Glamorgan distributed thus: Rhondda 13, Pontypridd 4, Llantrisant and Llantwitfardre 2, Swansea 1. The other 34 cases were reported in ones or twos from 11 county boroughs, 2 metropolitan boroughs, 10 urban districts, 3 rural districts, and 1 port.

The number of cases in the Infectious Hospitals of the London County Council on June 30 was 2847, which included: Scarlet fever, 665; diphtheria, 513 (carriers, 17); measles, 20; whooping-cough, 784; puerperal fever, 19 mothers (plus 12 babies); encephalitis lethargica, 305; poliomyelitis, 3. At St. Margaret's Hospital there were 24 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox or enteric fever, 7 (0) from measles, 3 (0) from scarlet fever, 12 (3) from whooping-cough, 13 (1) from diphtheria, 35 (7) from diarrhœa and enteritis under two years, and 8 (1) from influenza. The figures in parentheses are those for London itself.

Stoke-on-Trent reported 4 fatal cases of measles, Birmingham 2. Fatal cases of diphtheria were scattered over 11 great towns, South Shields reporting 3. Southampton had 4 deaths from diarrhœa, Birmingham 3.

The number of stillbirths notified during the week was 231 (corresponding to a rate of 34 per 1000 total births), including 38 in London.

LETTERS TO THE EDITOR

STAFF CONDITIONS IN THE HOTEL INDUSTRY

SIR,—As a student of occupational hygiene, and a firm believer in the need for every worker to have a proper holiday each year with pay, I have been increasingly concerned to find serious shortcomings in the conditions of employment in the hotel and catering trades. These trades are the mainstay of the holidays the rest of us enjoy. It is therefore disconcerting to find that not only do hotel workers have to rely on the uneven flow of tips in order to obtain a living wage but that the hours are often very long and proper time for recreation lacking.

Your columns, Sir, may not be the place to discuss economic matters in detail, but I trust you will allow this problem to be ventilated as a public-health issue. Holidays have important prophylactic and therapeutic value. They lie at the root of much of the work of the national-fitness movement. The time has come to see that those who work at the task of giving to others health and vitality during the best parts of the year should not be left unconsidered. They too should have light and air, good working conditions, proper pay and adequate holidays. Their standards of living should not be dependent on gratuities and the whole question should be the subject of full investigation and public consideration at an early date. If every doctor would make it a self-imposed task to inquire about staff conditions in the hotels and boarding-houses in which they stay this summer, I think many will have their eyes opened to matters which have for too long been taken for granted.

It is only fair to say that management is not necessarily to blame for shortcomings. Methods of taxation and rating, the absence of a proper code of hygiene enforceable equitably on all establishments and the unregulated demands of the public make it almost impossible for some establishments to survive competition and at the same time give their staffs the conditions they would wish. This is not a question for recrimination but mainly one for objective inquiry and common-sense, fair and equitable regulations.

I am, Sir, yours faithfully,

Beeston, Nottingham, June 27. L. P. LOCKHART.

AN ORTHOPÆDIC UNIT FOR CHINA

SIR,—During the past year the Chinese Red Cross has come to realise the importance of orthopædics in war surgery and has sent an appeal for help to the British Orthopædic Association. We are asked to provide a relatively small (250 beds) teaching unit, to be established well behind the Chinese lines, and a surgical director whose business it will be to instruct Chinese surgeons in orthopædic surgery, so that they will then be able to deal more competently with the enormous numbers of wounded at other military and civilian hospitals. The sum required is £3500—£10 for the provision of each bed, and £1000 for special equipment in the practice of orthopædic surgery.

It is unusual for a small and purely scientific society like the British Orthopædic Association to undertake a responsibility of this kind, but the appeal is such that it cannot be refused. The members of the Association have already given over £1100 (the list of donations is below), but they cannot possibly subscribe the whole amount themselves. We are therefore asking, in coöperation with the British Fund for the Relief of Distress in China, for the aid of the medical profession as a whole.

These are difficult times, but there was never a period when it was so desirable to show that medicine is international in deeds as well as in words. This country has given the world Sir Robert Jones, the greatest orthopædic surgeon of all time, and it is natural that another country, desperately in need of enlightenment in the treatment of limb and spinal injuries, should look to us. It is proposed to call the surgeon who goes to China "The Robert Jones Emergency Relief Surgeon."

The urgency and the importance of this appeal cannot be denied; if generous support is immediately forthcoming it will be possible to dispatch a surgeon with little delay, as arrangements for the administration of the fund in China have just been completed.

Donations may be sent to either of the undersigned and should be marked "orthopædic."

We are, Sir, yours faithfully,

NAUGHTON DUNN,
President, British Orthopædic Association,
25, Calthorpe Road, Edgbaston,
Birmingham;

H. GORDON THOMPSON,
Executive Secretary and Treasurer, British
Fund for the Relief of Distress in China,
121, Westbourne Terrace, W.2.

PS.—The following sums have been received from members of the Association whose names appear below: two donations of 100 guineas, one of £50 14*s.* 10*d.*, six of £50, one of 25 guineas, eleven of £25, three of £20, one of 15 guineas, two of £15, one of 10 guineas, four of £10, nine of 5 guineas, three of £5, one of 4 guineas, four of 3 guineas, one of £3, seven of 2 guineas, and eleven of 1 guinea. Total £1126 10*s.* 10*d.*

Anon, R. Barnes, W. R. Bristow, E. P. Brockman, Ralph Brooke, B. H. Burns, R. W. Butler, N. L. Capener, C. Hope Carlton, A. Chance, H. Chitty, J. A. Cholmeley, H. Osmond Clarke, S. G. Davidson, J. Dawson, Naughton Dunn, W. J. Eastwood, A. L. Eyre-Brook, W. B. Foley, L. Forman, A. Fowler, Sir Harold Gillies, Prof. G. R. Girdlestone, A. M. Hendry, G. Hyman, C. Gordon Irwin, S. T. Irwin, Miss Jebens, E. B. Jones, C. R. M. Jones, R. Watson Jones, C. Lambrinudi, R. S. Lawson, G. Lillie, — Kelly, B. L. McFarland, T. P. McMurray, Grant Massie, W. Mercer, G. P. Mills, S. M. Milner, A. Mitchell, Mrs. Morley, R. C. Murray, T. P. Noble, Viscount Nuffield, G. T. Partridge, J. H. Paul, R. G. Pulvertaft, A. Quine, J. R. Ratcliffe, A. Rocyn Jones, N. Rocyn Jones, Prof. Lambert Rogers, J. C. Scott, H. J. Seddon, W. Sirey, J. F. H. Stallman, R. Stirling, R. G. Taylor, V. J. M. Taylor, G. E. Thomas, Alan Todd, D. Trevor, W. E. Tucker, Philip Wiles, F. Aitken Walker, J. B. Ferguson Wilson.

THE PROBLEM OF MEDICAL LITERATURE

SIR,—The suggestions outlined by Professor McDowall, Mr. Lloyd, Mr. Zachary Cope, and Mr. Barnard indicate the need for a conference at which the problem may be fully discussed, both from the medical man's and the librarian's viewpoints. Discussion should include the ideas of both the user and the administrator of the literature; I venture to add the following remarks:—

(1) The need for the publication of a British journal abstracting medical literature is very real, and the arrangement of this periodical might be based upon that of the *Quarterly Cumulative Index Medicus*, although more frequent publication is highly desirable.

(2) Unofficial coöperation between librarians to persuade their committees to drop subscriptions to periodicals is most dangerous for the following reasons: (*a*) journals duplicated in most libraries are those in most demand, and to expect to borrow them from another library for any length of time is fallacious; (*b*) when a research worker requires a book he usually wants it at once and cannot be expected to wait while the librarian sends to the nearest library stocking it, where it is quite possibly in use; and (*c*) a library cancelling the subscription

to a periodical cannot be sure that this will always be available at the library at present willing to lend it, and to make up sets by the purchase of back numbers is often extremely expensive.

(3) Most medical men belong to certain medical societies, and those in London have access to some of the largest collections of medical literature in existence. They cannot expect any one library to stock everything, and the existence of published catalogues of medical libraries and of joint catalogues makes the tracing of papers comparatively easy.

(4) Many libraries are most willing to borrow but not to lend, and this is often caused by the attitude of members of the staff who are very annoyed when a required volume is found to be on loan to another institution.

(5) The idea of a central library taking every periodical and the more expensive monographs is to be commended, and, if it could duplicate the stock so that a copy would be available for reference and another for loan its importance would be enhanced.

(6) Although many libraries will not lend their stock, few librarians will refuse to allow a person to consult the books under his care.

(7) The main problem appears to be a matter of finance. An abstracting journal would have to be promoted; abstractors and translators must be paid, and libraries are at present notoriously understaffed. The money will not be raised by cutting down subscriptions to periodicals; it would be better to increase present facilities by coöperation for the mutual loan of rare material and of reproductions of more modern papers by the photostat and microphotography. The interchange of duplicates and of unused material is also a source but little exploited at the moment, despite the fact that most libraries are cramped for space.

These are some of the points that would have to be considered in any attempt to solve the problem.

I am, Sir, yours faithfully,

JOHN L. THORNTON,
Librarian.

St. Bartholomew's Hospital Medical College, E.C.1, July 3.

ERGOTAMINE TARTRATE IN MIGRAINE

SIR,—In my letter in THE LANCET of July 16, 1938, I endeavoured to dissipate the doubts as to the effect of continued treatment with ergotamine tartrate (Femergin Sandoz) expressed in communications I received from medical men all over the country, following the publication of my experience of this alkaloid in your issue of March 27, 1937. In this letter I stated that for over a year I had used the alkaloid prophylactically and had injected the contents of a 0·5 c.cm. ampoule (containing 0·375 mg. ergotamine tartrate) every night without ill effect of any kind thereby completely eliminating the morning headache that I had always experienced on awakening.

As another year has now elapsed, during which I have continued this practice without a day's intermission and again without the slightest ill effect, I feel that this somewhat unique experience should be recorded. With the exception of Macdonald Critchley, who has referred to two cases receiving 0·4 and 0·7 c.cm. femergin daily for two years and one year respectively (*Medical Annual*, 1939, p. 336), none of the workers who have had extensive experience of the treatment (including such authorities as von Storch, O'Sullivan, Graham and Wolff) mention anything approaching so long a trial—i.e., two to three injections a week for a year and a daily injection for the following two years. I would also like to record the case of a patient.

A lady of 74 had suffered all her life from a severe and incapacitating migraine, in which, as in my own case, the attacks steadily became more frequent as she grew older, until she was scarcely ever free. At the time she began treatment with ergotamine in June, 1937, she was debilitated, could only partake of a very restricted diet and had lost a lot of weight. She received so much benefit, although only taking tablets orally with an occasional injection, that in March, 1938, she began having a 0·5 c.cm. ampoule injected every night. This led to great improvement, but she was still not completely free from headaches. As her attacks were much more severe than my own, I thought that a larger dose was indicated in her case, and in August last she began taking 1 c.cm. regularly every night. This proved effective and after a daily injection for 15 months she is much better in general health than she has been for years, is exceptionally active physically and mentally, has gained 14 lb. in weight, can eat anything, and is, as she says, "a new woman."

I think that the cases of this lady and myself are strong evidence that the fears expressed in regard to the danger of continued treatment are greatly exaggerated.

I am, Sir, yours faithfully,

Desford, Leicester, July 1. T. W. GORDON KELLY.

RENAL IRRITATION DURING SULPHONAMIDE THERAPY

SIR,—In September, 1938, Robertson [1] reported a brisk hæmaturia which appeared on the third day of M. & B. 693 treatment of a boy, aged 14, with pneumococcal meningitis, and lasted two days; he suggested that it was due to the drug. In March, 1939, Adalja [2] reported a case of hæmaturia during treatment of a pneumonic patient with M. & B. 693, the hæmaturia ceasing on withdrawal of the drug. Gross and Cooper [3] and Antopol and Robinson [4] simultaneously reported finding urinary calculi in rats, rabbits, and monkeys, after receiving the same drug. This seems to indicate renal damage, in which case the following facts may be of interest.

During the past few months 75 male patients with gonorrhœa have been treated with M. & B. 693 or with Uleron at the V.D. clinic, Royal Victoria Hospital, Belfast. Routine microscopical urinary examination revealed the presence of red blood-cells in 35 (46·6 per cent.) cases: 29 out of 65 treated with M. & B. 693, and 6 out of 10 treated with uleron. In the case of M. & B. 693, 26 of the patients showed the cells either during treatment (8 cases) or within the first five or six weeks following cessation of chemotherapy. With uleron 5 cases demonstrated the phenomenon during chemotherapy and 1 within two or three weeks following the end of treatment. In no case was the dose of either drug excessive, the maximal dose with M. & B. 693 being 29·5 g. over a period of fourteen days, and with uleron 36 g. given in three four-day "stosses," the "stosses" being separated by eight-day intervals. In most of the cases treated with M. & B. 693 dosage varied from 15 to 22 g. over a period of seven to ten days.

Trauma was a possible explanation in 6 cases, for the appearance of the red blood-cells followed within a short time after instrumentation, but in 5 of these red blood-cells were also found either before or months after mechanical interference. Most of the cases showed the cells on more than one occasion, and several were still exhibiting them on their default several weeks after cessation of chemotherapy.

Except in 4 cases, the laboratory report was "few or occasional red blood-cells." In the 4 exceptions

1. Robertson, K., *Lancet*, 1938, **2**, 728.
2. Adalja, K. V., *Brit. med. J.* March 25, 1939, p. 643.
3. Gross, P., and Cooper, F. B., *Ibid*, May 20, 1939, p. 1058.
4. Antopol, W., and Robinson, *Proc. Soc. exp. Biol., N.Y.* 1939, **40**, 428.

a "moderate number of red blood-cells" was found on one or more examinations. Oxalate crystals were found in 3 instances, and casts but no red blood-cells were reported in 1 case with M. & B. 693. Oxalate crystals but no red blood-cells were found in 1 patient who had been treated with uleron. In 2 cases red blood-cells were also found before chemotherapy. Red blood-cells appeared in 1 case during a first course with M. & B. 693, but no reappearance was noted after a second exhibition of the drug. In 1 case cells were found during a second but not during the first course of the drug. In 1 no red blood-cells were reported during two courses of M. & B. 693, but they were found on several occasions during and after subsequent treatment with uleron, and 1 case showed red blood-cells after treatment with M. & B. 693 but has not so far had a repetition of the condition despite one five-day "stoss" of uleron. He is still on treatment.

Examinations of the concentrations of M. & B. 693 in the blood and urine were carried out by Werner's [5] method in 7 cases, and of these 4 showed a maximum of the free drug in the blood of over 4 mg. per 100 c.cm. and 2 a maximum of over 6 mg. per 100 c.cm. A urinary maximum of the free drug of over 170 mg. per 100 c.cm. was found in 5 cases, 3 showing over 200 mg. per 100 c.cm. In another case the "combined" drug was almost four times as great as the amount of "free" throughout treatment, an unusual finding in my experience.

As pointed out, the dosage in this series was small. In view of the heavy dosage at present suggested by a number of workers, I feel that this preliminary report is justified.

I am indebted to Dr. J. C. Rankin and Dr. H. E. Hall, of the V.D. clinic, Royal Victoria Hospital, Belfast, for permission to publish these reports; to them and to Prof. E. B. C. Mayrs, of the department of pharmacology in Queen's University, Belfast, for their helpful criticism and advice; and to Dr. J. Houston, of the department of pathology, Royal Victoria Hospital, for most of the microscopical urinary examinations.

I am, Sir, yours faithfully,

J. S. McCANN.

V.D. Clinic, Royal Victoria Hospital, Belfast, and Department of Pharmacology, Queen's University, Belfast, June 28.

UNORTHODOX TERMINOLOGY

SIR,—I was almost "terrified" this morning, when by chance I read the comment of "Dr. Pangloss" in THE LANCET, June 24, p. 1462, on my article in the issue of June 17, p. 1395. Of course I know that "terra" means "dry," because we have a river in Catalonia which is always dry, for which reason the Romans called it the "Ter." "Terra" means dry and means "death," too, as opposed to "water" (wet), which means "life." This was known in ancient times and is the reason why the Egyptians, for instance, used the "rice test" to detect criminals; it was supposed that those who had committed a crime should be terrified (dry) and could not swallow the rice. Everybody knows that fear compels the individual to drink to overcome his "dryness."

I admit that my etymology may be unorthodox, and I thank "Dr. Pangloss" for his teaching, but, still, it seems to me easier to connect *terr*-or with *terr*-a than *terr*-or with *trem*-or.

I am, Sir, yours faithfully,

E. MIRA.

Maudsley Hospital, Denmark Hill, S.E.5, June 29.

5. Werner, A. E. A., *Lancet*, Jan. 7, 1939, p. 18.

PRESENTATION TO SIR ROBERT KELLY

SIR,—A committee, consisting of representatives of the Liverpool Royal Infirmary and other teaching hospitals, Liverpool University, and of his old surgical registrars and house-surgeons, has been formed to collect funds for the purpose of presenting Professor Kelly with his portrait, and in addition of perpetuating his name by a scholarship in association with surgical teaching or research at the University.

The appeal is being circulated to members of the above institutions, but it is felt that other medical men might like to associate themselves with the presentation. Subscriptions should be made payable to the University of Liverpool, and should be sent to the finance officer at the University.

I am, Sir, yours faithfully,

HUGH REID,

Liverpool, June 30. Secretary to the Committee

OBITUARY

WILLIAM MOSES FELDMAN

M.D. LOND., F.R.C.P., F.R.S.E.

THERE can be few men who combined such a deep book learning of child hygiene with practical experience as Dr. Feldman, who died suddenly on July 2, at the age of 58. He was born in Russia, the son of Israel Feldman, a merchant, and educated at the Jews' College and at the London Hospital, where he qualified in 1904. He went at once into general practice in the Whitechapel Road, where he remained all his life, at the same time doing non-resident appointments at the London Hospital. Child welfare was his main interest from the first, and in 1907 he published his book on "The Child: its Rearing, Development and Ailments," followed soon afterwards by his "Manual of Nursery Hygiene." He became physician to St. Mary's Hospital for women and children and to the East End Dispensary. At the same time mathematics was his hobby, and he applied it to such problems as calculating the number of capillaries in the human body and its surface area. He found time, too, to busy himself with social work, more particularly on behalf of the Jews, and he was a member of the Stepney borough council and of the council of the Society for the Study of Inebriety. He lectured for the London county council on midwifery and hygiene and in 1924 he gave a Chadwick lecture on antenatal and postnatal child physiology; he also examined for the General Nursing Council. He had a constant urge to write, his most ambitious work being his "Ante- and Post-natal Welfare," published in 1927. In this remarkable compilation he reviewed methods of promoting the well-being of children from every angle—historical, literary, biological and practical; and such was his grasp of the subject that he made even the more technical aspects easily comprehensible.

In 1913 Dr. Feldman married his cousin Hilda Feldman. They had no children.

TRAINING FELLOWSHIP IN PSYCHOSOMATIC RESEARCH.—The Rockefeller Foundation has made available for three years from Sept. 1 a training fellowship of the annual value of £450, which is tenable at the Tavistock Clinic. Further particulars are given in our advertisement columns and application forms may be obtained from Dr. A. T. M. Wilson, Tavistock Clinic, Malet Place, London, W.C.1.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

THE discussions in the House last week were for the most part on the Finance Bill, three days, the Armaments Profits Duty one day and unemployment for the wind-up of the week on Friday. The Minister gave statistics to show the increase of those registered as employed. The opposition pointed to the serious condition of the areas where unemployment reached a high percentage of the available labour. As one member said, "There is a total of 25,999 people in Durham county who have not worked for more than a year." It is very little help to these people to know that others are employed.

* * *

The question of unemployment must for certain statistical purposes and for the purpose of the unemployment insurance benefit be considered from the point of view of numbers. But these numbers require careful interpretation if the effect on the body politic of the disease of unemployment is to be accurately diagnosed and adequately treated. Long-term unemployment—as was brought out in the debate—produces "devastating physical effects." The director of education of Durham county has shown recently that 16·8 per cent. of the secondary-school pupils in Durham are suffering from undernourishment and he suggests that "something should be done" to provide solid meals for those children. A comparison between pupils in Durham and pupils in Surrey was interesting—the Durham (Spennymoor) pupils were about one year behind the Surrey (Surbiton) pupils in physique. The medical officer concerned was quoted in the debate as saying, "In my opinion the returns are indicative of a deterioration in the nutrition of a proportion of the children formerly classified as normal. This deterioration has occurred in spite of the fact that the number of children receiving free milk in the secondary schools has increased each year since the scheme was inaugurated, and, as in the case of the elementary schools, I am disposed to recommend the provision of solid meals in the secondary schools."

Mr. Joseph Stewart, who dealt with this case, showed how Durham county had had to spend £63,000 on food for elementary-school children, £30,000 on liquid milk meals and £30,000 on milk for nursing and expectant mothers, while over a million and a half was spent (in 1938) on public assistance and over five million on unemployment benefit and allowances—yet with all this "our people in the special areas are deteriorating."

Another aspect of the same problem was brought out in the report of the Unemployment Assistance Board, where, in the introduction, Lord Rushcliffe, the chairman, calls "the most serious attention" to the effect of prolonged unemployment on 100,000 young men. Mr. Arthur Henderson said that a visitor from another planet would find it difficult to understand why there should be any unemployment at all. The potentialities of consumption were greater than those of production.

Running through the debate was an expression of apprehension. If the numbers and conditions of unemployed are as they are today with all the boom demand for employment on armaments what will they be in the future when—at some time—the piling up of armaments ceases? What is to happen in a post-war or a post-peace world with production on a normal footing? Mr. Ernest Brown, the Minister of Labour with the famous voice, did his best to be cheerful and optimistic about it. But the House was not really convinced despite the vote. The question still remains to be answered: "What is the disease of unemployment doing to the body of the nation?" The House did not answer the question. Perhaps it is a question for a preventive social medicine service.

* * *

This week the Government are presenting a Milk Industry (No. 2) Bill in place of the one which was introduced in November last and withdrawn because of opposition on the Government side. The original bill contained 75 clauses and 8 schedules, the present one contains 10 clauses and 1 schedule. The proposals for pasteurisation are dropped, but "consumers' committees" are to be brought into consultation with boards and other persons before prices and terms of sale of milk are settled. And payments are to be made to milk producers who produce and sell accredited milk, standard milk, tuberculin-tested milk, certified milk or milk from an attested herd. One proposal, in clause 2, provides for Government contributions to milk marketing board towards the supply of milk at reduced prices for consumption by school-children, expectant or nursing mothers or children under five. A bill passed last year put a sum of a quarter of a million at the disposal of the Government to pay for milk for expectant or nursing mothers or children under five, but up to last month and presumably up to the present time none of that money had been spent because the Government did not make arrangements to pay for milk distribution. The House will certainly want to know whether the "provisions" of the bill will be purely "administrative" or whether, in the future, they will have a definite nutritive value.

FROM THE PRESS GALLERY

Scottish Health Services

IN the House of Commons on July 4 Colonel COLVILLE, Secretary of State for Scotland, in introducing the vote for the Department of Health, said that with a net increase of over £270,000 on last year the total estimate was brought to over £4,000,000. Housing accounted for the greater part of the increase, but among the other items showing increases were the maternity services and the Highlands and Islands medical services. The items that showed the more important decreases come under the head of national health insurance, and these decreases were due partly to a windfall from the navy, army and air force insurance fund, and, in greater measure, to the lower rate of sickness among the general insured population in 1938. A new item was the grants to local authorities for cancer treatment, the beginning of what he hoped would be an effective aid in the fight against this disease.

The department was working at high pressure on emergency work of civil defence, including the organisation of the emergency hospital service and of medical, nursing, dental and other personnel, the approval of first-aid posts and ambulance schemes made by local authorities, the evacuation scheme and the provision of camps. The financial provision for this work ran into millions.

There could be no doubt, said Colonel Colville, that the health and other social services were returning a substantial dividend in the form of improved health standards. In 1938 the general death-rate, the infant death-rate, and the tuberculosis death-

rate were all the lowest on record. The infant death-rates in Edinburgh, Dundee and Aberdeen were now less than half what they were at the beginning of the century. School health records showed that, in height and weight and general vitality, the children at different ages were better physically than their predecessors. In Glasgow the boys of thirteen were 7½ lb. heavier and 2 in. taller than the boys examined in 1920; the girls were 9 lb. heavier and 2 in. taller.

In regard to the Maternity Services Act passed in 1937, the initial difficulties were now being overcome, and the act was being brought into operation in different parts of Scotland. Schemes under the act were in operation in the areas of 14 local authorities; another 9 schemes had been approved and would come into operation shortly, and many of the schemes of the 30 remaining local authorities were at an advanced stage. It was worth noting that for the first time in history the population of Scotland had reached the 5 million mark, according to the provisional estimate of the registrar-general.

The increasing numbers of old people partly explained the increased incidence of cancer. Colonel Colville hoped to issue shortly a circular to local authorities on the Cancer Act; but the full operation of the act would depend on, among other things, exact knowledge of the existing facilities in Scotland, what developments were desirable, and where. An expert advisory committee was at present considering these matters, and he hoped to have its report before the end of October.

Workers in this field had been inspired by success in related fields. Last year, for instance, recognition of the therapeutic value of the sulphanilamide compounds—including the well-known M. & B. 693—opened up new vistas in the treatment of certain diseases that were the active concern of the health authorities. These compounds had had marked success against puerperal fever, one of the main causes of maternal deaths, and there seemed to be good promise that in them a means of controlling the scourge of pneumonia had been found.

The increase of £10,000 for the Highlands and Islands medical service brought the total under this head to £106,000—2½ times the original provision. It was wanted mainly for assistance towards the cost of a new general hospital at Lerwick, Zetland, and additions to the general hospital at Stornoway in Lewis. These two hospitals were essential links in the chain of medical services—doctors, nurses, hospitals, specialists, and so on—that now served admirably the Highlands and Islands of Scotland. The air-ambulance service between the Western Isles and the Renfrew airport continued to prove a boon in urgent cases. During 1938 over 30 patients were transported by air to hospital at Glasgow under the grant-assisted schemes of the county councils of Argyll and Inverness.

About the hospital services of Scotland generally Colonel Colville said that there were still deficiencies, but schemes for repairing them were under way. These included a large new general and maternity hospital and a new fever hospital in Lanarkshire.

The number of persons coming within the scope of the national health insurance scheme increased in 1938 by nearly 200,000 and the expenditure on cash benefits per head declined from 4·89*d.* in 1937 to 4·40*d.* in 1938. The decline in that expenditure reflected a lower sickness-rate; the average cost was the lowest since 1934. But influenza had been busy during the opening months of 1939, and sickness expenditure increased accordingly.

A new scheme for milk at reduced prices to nursing an expectant mothers and children under five years of age had been started. The intention of this scheme was that one pint of milk a day, free, or at a price not exceeding 2*d.* a pint, should be supplied. He had brought this scheme to the notice of local authorities, and the reception had been favourable.

Collections for Hospitals

In the House of Lords on July 4 Lord MACMILLAN moved an amendment to the Charitable Collections (Regulation) Bill, providing that where a police authority refused to grant a licence or revoked a licence which had been granted, the applicant or holder of the licence might appeal to the Home Secretary. He said that it seemed ridiculous that a hospital, such as the Hospital for Sick Children in Great Ormond Street, which was supported by people in every part of England and many in Scotland, should have to obtain the authority of the police in every particular area where a collection was made. For this hospital, which was to all intents and purposes a national charity, and for many other hospitals to have to get the necessary licences all over the country would be extremely hampering to their work.—The Marquess of ABERDEEN said that the joint committee had discussed the question of an appeal and had come to the conclusion that because of the difficulty of confining it to reputable cases of charity there ought to be no appeal. The local police would know which were the reputable institutions in their district.—The amendment was withdrawn.

Lord LUKE moved an amendment providing that the Home Secretary might exempt from the necessity of obtaining a police licence a person desirous of promoting collections for a voluntary hospital approved by the British Hospitals Association or by King Edward's Hospital Fund. He said that the reason why the hospitals were not included in the favoured list of charities associated with the bill was because they did not beg nationally. It was admitted that they served the community very well locally and in some instances did so throughout the country, but on the whole their service departments were usually better than their appeal sections, and the latter did not often reach from Land's End to John O'Groats. In the past they had obtained support from an area, say, of 50 or even 100 miles around their hospitals, from which district they received the bulk of their patients, though in these days of motor accidents they might have patients from any part of the country. Their area might include half a dozen, or even a dozen, police divisions and in each of these the favoured outside authorities would start with an advantage over the local hospital by having exemption. The amendment would not put the local hospitals at the head of the favoured list of charities; it would only put them on a level and that after they had been thoroughly approved by one of the two central hospital bodies.—The Earl of COURTOWN said that the proposal would give undue advantage to a voluntary and non-elected association. The application of a local hospital which did not belong to that association for a licence to make a collection might be regarded with some doubt by the police. The joint committee had fully considered the matter and had decided that it was not necessary to include voluntary hospitals.—Viscount BRIDPORT said that the Government could not agree with the amendment. The trouble involved in applying to several police authorities in cases where a hospital covered a wide area would not be great.—The amendment was negatived.

The Milk Industry

In the House of Commons on June 29 Sir R. DORMAN-SMITH, Minister of Agriculture, presented the Milk Industry (No. 2) Bill, a measure "to authorise certain payments out of the Exchequer to milk marketing boards in respect of certain milk; to extend the powers and vary the duties of such boards as to the making of payments or allowances to producers of milk and in connection with approved arrangements for the sale of milk at reduced prices, and as to the manner in which moneys paid to the boards from the Exchequer are to be dealt with; and to extend the functions of consumers' com-

mittees in relation to milk marketing schemes and milk product marketing schemes and milk product development schemes." The bill was read a first time.

QUESTION TIME

JUNE 28–JULY 5

Medical Examination of Militiamen

Mr. PARKER asked the Minister of Labour whether he could give any explanation of the great divergence between the results of medical examinations for the Regular Army, the Royal Air Force, and the Militia.—Mr. ERNEST BROWN replied: The medical examinations for the regular forces have in view the requirements of the particular units in which the men wish to enlist, and cover a much wider age-range than that for the militia. Moreover, it is a common practice for an intending recruit who is rejected at one centre to try again at other centres or for other units and in this way the figure for rejections is to some degree inflated. For these reasons the real divergence between the results for the regular forces and those for the militia is considerably less than that represented by the crude figures.

Sir V. WARRENDER explained that in the event of a militiaman wishing to transfer to the Regular Army on completion of his service, he would again be medically examined to determine his fitness for the particular branch of the service to which he wished to transfer.

Answering three inquiries Mr. ERNEST BROWN said he would have a copy of the instructions issued to the medical boards placed in the library.

Mr. MATHERS: Will it not be possible for more publicity to be given to these instructions?—Mr. BROWN: The instructions are long and elaborate and have been drawn up with great care in consultation with a number of experts.

Dr. SUMMERSKILL asked whether a militiaman who had an unsatisfactory medical history and who was dissatisfied with the decision of the examining doctor was given the right to appeal for a second opinion from a specialist.—Mr. BROWN replied: The decisions of the medical boards are final, but arrangements are made for men to be referred to consultants for report when the boards are in doubt.

Dr. SUMMERSKILL: Is the right hon. gentleman aware that many members on this side of the House have cases sent to them day after day of men who have been certified as suffering from a certain complaint but are now passed fit for service?—Mr. BROWN: I hope that hon. members will send them on to me. The thing that has struck me for the last fortnight is the very small number of letters I have had on this matter.

Physical Defects in Militiamen

Mr. JOHN MORGAN asked the Secretary of State for War if any special steps would be taken to remedy admitted physical defects in militiamen, accepted for other grades than grade I, while undergoing their period of military service.—Sir V. WARRENDER: Medical and surgical treatment will be available as for regular soldiers. Minor physical defects will be noted on medical examination and by staff instructors in physical training. Those requiring remedial treatment by physical-training methods will be divided into groups according to their defects, and remedial treatment will be carried out under the supervision of staff instructors.

Unemployed Persons and Physical Defects

Mr. DAVID ADAMS asked the Minister of Labour how many men in receipt of Unemployment Assistance Board allowances were estimated to be unable to obtain work owing to remediable physical defects; and as treatment of eyes and teeth frequently could not be obtained through existing medical services he would take immediate steps, in conjunction with the Ministry of Health, to extend the public-health services in this direction.—Mr. ERNEST BROWN replied: I regret that more precise information than that given on pages 46–47 of the board's annual report for 1938 is not available. I am already in communication with the Minister of Health on the matter raised in the second part of the question.

Health Insurance Handbooks

Mr. LOGAN asked the Minister of Health when he intended to issue an up-to-date consolidation of the National Health Insurance Acts; and if it was intended also to issue an approved societies' handbook.—Mr. ELLIOT replied: I understand the reference in the first part of the question to be to the projected volume containing the consolidated National Health Insurance Acts and the regulations made thereunder. While some progress is being made in the preparation of this volume, and also of a revised edition of the Approved Societies' Handbook, pressure of other urgent work in my department has delayed their completion. I hope that it may be found possible to issue the former volume within the next few months, but I am afraid that I cannot promise an early issue of the latter.

Expectant Mother's Choice of Doctor

Mr. GORDON MACDONALD asked the Minister of Health whether, as it was possible for circular 1705, sent out by his department, to so limit the choice of an expectant mother as to prevent her from having the services of her family doctor should she so desire, he would so modify the circular as to do away with such a hardship.—Mr. BERNAYS replied: The circular does not impose or purport to impose such a limitation as is suggested in the question. The procedure suggested in the circular contemplates that ordinarily some practitioner on the list prepared by the local supervising authority will be acceptable to the expectant mother, but the circular makes it clear that where this is not the case and the expectant mother desires the services of some other duly qualified medical practitioner, this practitioner should be called in by the midwife.

Lancashire Advisory Committee

Mr. GORDON MACDONALD asked the Minister of Health the names of the advisory committee for the area of the Lancashire county council, set up in consequence of the same circular; and what consultations took place prior to the setting up of the committee.—Mr. BERNAYS replied: I am informed by the county council that the committee is composed as follows: Chairman: Dr. Hall (C.M.O.). Obstetric consultants: Prof. Leyland Robinson and Professor Dougal. General practitioners: Dr. Marsh and Dr. Winstanley. Before making these appointments consultation took place, as suggested in the circular, with the organisations of medical practitioners which appeared to the county council effectively to represent the opinions of practitioners in the county. The President of the Royal College of Obstetricians and Gynæcologists was approached with regard to the appointment of the two obstetric consultants, and the general practitioners and their deputies were nominated for appointment by the Lancashire and Cheshire branch of the British Medical Association.

Rheumatism Eligible for Additional Benefit

Major CARVER asked the Minister of Health whether, in view of the serious incidence of rheumatism among insured persons, he would cause treatment at recognised British spas, given under medical recommendation, to rank for payment in whole or in part by approved societies where such were able to give additional benefit, No. 16, payment to approved charitable institutions in respect of any treatment of members required for the prevention or cure of disease provided under the third schedule of the National Health Insurance Act, 1936.—Mr. ELLIOT replied: I am prepared to consider the granting of approval for the purposes of additional benefit No. 16 to any charitable institution which satisfies me that it has available diagnostic and other facilities of a high standard for the treatment of rheumatism. I am not, however, at present satisfied that there is a sufficient case for the extension of the benefit to cover treatment at a spa otherwise than in an approved charitable institution.

Ice-cream

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he was aware that a considerable

amount of ice-cream was made without cream or milk; and if he would bring in legislation to compel ice-cream makers to state the quantity and quality of milk used in ice-creams they sold to the public—Mr. ELLIOT replied: I am aware that some frozen mixtures sold as ices or ice-cream may contain little or no cream or milk. The Food and Drugs Act, 1938, which comes into operation on Oct. 1, will give me increased powers for making regulations governing the composition of food and kindred matters, and I am considering the question of making regulations as to ice-cream.

Brigadier-General BROWN: Does not my right hon. friend think that the time has come when a statutory standard should apply to all ice-cream sold; and will he make regulations to that effect?—Mr. ELLIOT: I will take these points into consideration.

Sir PERCY HARRIS: Have not the local authorities power to make by-laws to regulate the sale of ice-cream?—Mr. ELLIOT: I am not sure how far their powers go, but the new act will certainly give greater powers to the central department.

Objection to Vaccination

Miss RATHBONE asked the Minister of Health whether he was aware that a statutory declaration of conscientious objection to vaccination made by the wife of a labourer in the Royal Arsenal, Woolwich, on behalf of her child, was recently refused by the vaccination officer of the Metropolitan borough of Woolwich on the ground that only the declaration of the father of the child could be accepted, he having its legal custody; that in this case the father was prevented from making a declaration owing to his hours of work being from 8.20 A.M. to 6 P.M., and that in many other cases the father might be prevented by illness, mental disability, or temporary absence from home; and whether he would consider making such a change in the regulations as would enable the mother to make the declaration.—Mr. ELLIOT replied: My attention has not previously been drawn to this case. The statutory declaration may be made before either a commissioner for oaths or a justice of the peace at any time. I cannot, therefore, accept the contention that the father concerned was prevented from making such a declaration because of his hours of work. I do not consider it necessary to propose the amendment of the law which the hon. member suggests.

Miss RATHBONE: Is the right hon. gentleman aware that this refusal to acknowledge the statutory declaration of the mother is not only practically inconvenient in many cases but is an insult to the mother and is quite inconsistent with the spirit of the declaration and of the Custody of children Act; and will not the Government consider taking action if necessary in the way of legislation to give equal rights to the father and mother in this matter?

Advertisements in Stamp Books

Sir FRANCIS FREMANTLE asked the Postmaster-General if his attention had been drawn to two advertisements in current issues of 5*s*. books of stamps, one headed trusses abolished, and the other claiming immediate results from an advertised remedy for bladder and other complaints; and whether he would take action to prevent Government publications from being used as a medium for such advertisements.—Mr. MABANE, Assistant Postmaster-General replied: The policy of the Post Office is to exclude advertisements of medicines covered by paragraph 58 (2) of the report of the Select Committee on Patent Medicines 1914. The two advertisements referred to by my hon. friend do not contravene the terms of this paragraph. My right hon. friend is looking further into the policy of the Post Office in this matter.

Betting and Research

Replying to Sir THOMAS MOORE, Mr. PEAKE, under-secretary, Home Office, stated that he was informed by the Racecourse Betting Control Board that from the surplus in the totalisator fund at Dec. 31, 1938, £4500 had been allocated towards the advancement and encouragement of veterinary science and education. The £1500 granted to the Agricultural Research Council towards the cost of investigation into the various diseases and disorders of horses would be applied in assisting inter alia research work at the Moredun Institution and the Royal (Dick) Veterinary College, Edinburgh. £750 was granted to the building fund of the Royal (Dick) Veterinary College, Edinburgh. £500 was granted to the Glasgow Veterinary College towards the cost of microscopes.

MEDICAL NEWS

University of Liverpool

At recent examinations the following candidates were successful:—

M.D.

A. Ashworth, Phillis Dingle, F. Glyn-Hughes, N. M. Hancox, G. E. Hesketh, F. T. Madge, and T. H. Pierce.

CH.M.

H. L. Davies.

FINAL EXAMINATION FOR M.B., CH.B.

D. M. I. Freeman (with first-class honours); R. M. Evans and Pearl Lyons (with second-class honours).

Part III.—S. Ball, A. R. Bracey, Frances E. Brierton, R. F. Browne, W. E. Coates, Florence M. E. Davies, E. T. Downham, Margaret Edge, T. S. Eimerl, S. Ellenbogen, H. B. Forrest, J. A. Gillet, C. M. Gregory, Harry Hall, E. L. Hamm, J. Harders, F. Hedley, Bessie Howarth, H. Ingham, C. T. Jenkins, R. R. Knowles, A. L. Latner, P. C. Lawson, Anne E. McCandless, Sylvia Makin, Eileen E. V. Martin, E. F. Mason, R. J. Miller, G. W. H. Millington, J. D. Muir, T. Murtock, A. G. O'Malley, R. J. Parry, Margaret E. Parry-Edwards, R. Paul, Eleanor M. Pearson, L. G. Poole, A. G. Porterfield, T. Price, Kathleen Pugh-Jones, V. A. Rogers, C. R. Sluming, W. O. Spence, Lucy M. Sutcliffe, Catherine S. Thomas, G. O. Thomas, Megan E. Thomas, Joan P. Thomson, J. N. Threlfall, Olivia S. Turner, J. A. Wethered, and A. G. Williams.

Part II.—I. Ansell, S. C. Barnes, H. N. C. Bleasdale, G. J. C. Brittain, D. J. Browne, Helen M. Carmichael, W. F. Christian, E. A. Cookson, N. A. G. Covell, Grace T. Dawson, D. W. Ellis-Jones, W. E. Gill, H. G. Griffin, A. H. Hands, J. B. Hannah, Catherine W. L. Harries, R. Hermon, J. R. Hughes, W. J. Hughes, Jean G. Huntley, C. Ibbotson, C. N. Iland, R. V. Imundi, I. Levinson, Joan F. Macara, M. G. McColl, A. K. Mitting, J. G. Mott, S. B. Nelles, G. V. Osborne, W. H. Patridge, W. Rotherham, Kate E. Rymer, T. A. Sale, C. C. Slack, Beryl M. Smith, R. A. Smith, F. L. Thomas, E. E. Vaughan, G. R. Wadsworth, Hilda Walker, Kathleen M. Walters, Agnes M. Williams, Mair Williams, and E. H. Winterbottom.

Part I.—Katharine E. Ainsworth, R. A. Allen, G. M. Ardran, Olive R. Ballance, Anita M. Beck, W. H. Berry, A. K. Bingham, G. J. C. Brittain, W. P. Clothier, R. S. Cook, J. A. Donnellan, C. V. Donnelly, J. J. Ennitt, B. B. Evans, Elizabeth S. N. Fenton, H. E. D. Flack, H. W. Forshaw, G. L. Gamble, N. O. K. Gibbon, H. Hall, J. J. Hargadon, I. J. Harris, S. Horrocks, J. H. Hughes, M. W. Hutchings, Katie H. Jones, Mair E. Jones, N. B. Jones, W. J. Jones, Mary Jordan, A. C. Kirby, C. A. Kovachich, T. E. Lamb, D. Leslie, T. B. McMurray, M. Makin, K. J. Mann, Y. Mansour, Lucy D. Meyrick, J. Moorhouse, J. A. B. Nicholson, J. D. F. Norman, C. N. Partington, D. E. Paterson, H. C. Percy-Hughes, G. H. Pimblett, Joan E. M. Potts, A. G. Rickards, F. S. Rickards, M. Rosenthal, W. Rotheram, G. D. Scarrow, G. L. Shatwell, J. M. Swithinbank, W. G. Taaffe, W. L. Turner, E. Walker, Kathleen Walters, C. W. Walton, D. Whitaker, A. S. Whitehead, J. K. Wilson, J. Winter, and F. J. Zacharias.

D.M.R.E.

Part B.—B. M. Maxwell and W. Niven.

D.P.H.

Part I.—H. D. Collins and Margaret J. Roberts.
Part II.—J. C. Birchall, C. Coleiro, H. D. Collins, E. C. R. Couper, J. N. Das, Beryl Edgecombe, Ivy F. Fallon, Elsie O. Hughes, J. Leiper, F. T. Madge, E. H. Moore, and Moira Murray.

D.T.H.

J. M. Caldwell, S. G. Cowper, L. G. Eddey, W. H. R. Lumsden, K. Nadarajah and T. S. Outerbridge.

On July 1 the honorary degree of master of orthopædic surgery was conferred on Mr. H. A. T. Fairbank.

University of Sheffield

On July 1 the honorary degree of D.Sc. was conferred on Dr. Miles Phillips, emeritus professor of obstetrics and gynæcology in the university.

University of Manchester

Dr. J. N. Marshall Chalmers has been appointed assistant director of the laboratory of clinical investigations and research.

Dr. W. E. St. Lawrence Finny has been elected a vice-president of the British Archæological Association.

Volunteer Blood-donors

Those who wish to volunteer as blood-donors in wartime may obtain the address of the centre in their district and other particulars by telephoning Central 8691 between 9.30 A.M. and 9.30 P.M.

University of Bristol

At recent examinations the following candidates were successful :—

M.D.

Constance I. Ham.

FINAL EXAMINATION FOR M.B., CH.B.

Dorothy M. Shotton and C. A. St. Hill (with second-class honours); Dorothy M. Ayre, P. A. Bennett, A. A. K. Datta, Marjorie O. Dunster, J. L. Emery, Emily G. Hamlyn, Betty F. Hannaford, F. R. Hurford, N. E. Melling, Jeannette D. Shed, S. J. Silvey, P. R. H. Slade, Sylvia E. Smith, and T. H. White.

FINAL EXAMINATION FOR B.D.S.

G. H. Bell, J. E. H. Bell, J. F. Blenkinsop, R. J. Gething, A. A. Grant, and D. R. Stevens.

FINAL EXAMINATION FOR L.D.S.

K. A. Gordon-Ralph, G. H. Hudson, E. L. Manton, R. H. G. Sims, Mary E. Thomas, May A. Trump, L. N. Weale, H. D. Williams, and E. S. Wolfson.

In dental surgery, completing examination: F. W. Clift.

Dr. Ernst Philipp has obtained the degree of M.D.

Dr. Hilda Dutton has been appointed medical officer for the examination of women students and Dr. R. G. Cookson medical officer for the examination of men students.

University of Edinburgh

In 1926 on the recommendation of a special committee which had been set up by the university court a department of physical training was started in the university. Colonel Ronald Campbell was appointed director and was asked to organise and develop athletic activities and physical culture of the students. It has now been decided to institute a certificate of physical ability for men students who undergo successfully a progressive course of training extending over two consecutive sessions. At present there is no similar graded course for women but it is stated that "attention will be turned to this at an early date."

Royal College of Surgeons of Edinburgh

At recent examinations the following candidates were successful :—

L.D.S.

W. W. Brown, W. J. M. Gillies, T. D. Grandison, Michael Lipman, John Provan, Winifred G. Sivewright, E. F. Stonehouse, A. M. Sutherland, William Walker, and William Waterston.

University of Glasgow

On June 30 the following degrees were conferred :—

M.D.—J. D. P. Graham (with high commendation); J. A. Crocket and T. R. Pahwa * (with commendation); F. W. Bunting, J. M. Henderson, Alexander Lyall, and A. M. Steel.

* In absentia.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on July 3, with Dr. John Henderson, the president, in the chair, the following were admitted to the fellowship :—

Habibud-Din Ahmed (London); William Ferguson Anderson (Whitecraigs); Tom Osborne Howie (Glasgow); Velu Pillai Kumara Pillai (India); Alfred Sands Rogen (Glasgow); Bhupendra Nath Sur (Edinburgh); and Abu Khaled Muhammad Abdul Wahed (Edinburgh).

University of Aberdeen

During the annual conference of the British Medical Association which is being held at Aberdeen from July 21 to 28, the honorary degree of LL.D. will be conferred on the following :—

Dr. H. G. Dain, chairman of the representative body of the association; Dr. Thomas Fraser, president-elect of the association and consultant physician to the Aberdeen Royal Infirmary; Sir James Elliott, F.R.A.C.S., honorary consultant surgeon to Wellington Hospital and editor of the *New Zealand Medical Journal*; and Dr. Einor Meulengracht, professor of clinical medicine in the University of Copenhagen.

The A. W. Garden fellowship in ophthalmology and pathology has been awarded to Dr. D. F. Ritchie.

University of St. Andrews

On June 30 the following degrees and diplomas were conferred :—

D.Sc.—J. D. Robertson, M.D.

M.B., Ch.B.—B. S. Tulloch (with distinction); Winifred I. MacNicol, A. J. M. Cathro, W. J. McGinness, and Peter Kinnear (with commendation); R. M. Bell, J. M. Berry, J. M. Black, K. G. Broadbent, J. S. Brunton, John Cameron, Elizabeth P. Dodds, J. M. Duncan, A. C. Fraser, Elizabeth N. Harrison, M. C. Hodgson, W. F. E. Immelman, R. S. Kennedy, R. T. Kiddie, Douglas Latto, H. R. Lillie, A. R. T. Lundie, Elizabeth T. MacDougall, E. G. McPherson, D. J. Macrae, Charles Milne, D. S. Milne, Freda C. J. Nicoll, R. A. Philp, D. V. Porter, G. H. Rea, G. W. Taylor, Kathleen S. Turner, W. H. Whyment, J. S. Young, and John Young.

B.D.S.—I. M. B. Allan, E. A. Haxton, R. S. Henderson, J. L. Hutton, and R. P. McGlynn.

Diploma in Dental Surgery.—R. P. Edwards, W. R. D. Fraser, K. G. Galloway, D. M. Lawson, G. M. Lawson, G. D. McPherson, William Malcolm, and R. R. M. Wilson.

D.P.H.—W. B. Clark, C. R. Henderson, W. M. Jamieson, and William Sharpe.

Diploma in Public Dentistry.—D. A. Henderson, Isabel S. Powrie, W. M. Ross, and Robert Whyte.

National University of Ireland

At recent examinations at University College, Cork, the following candidates were successful :—

M.D.

V. J. Dillon, William Kearney, J. P. Morehan, and P. F. O'Connor.

FINAL EXAMINATION FOR M.B., B.CH., B.A.O.

M. F. McMahon and D. J. O'Callaghan (with first-class honours); E. A. Scher, F. H. Cross, Madeline M. Horgan, W. F. M. Fitzgerald, and M. J. Murphy (with second-class honours); G. N. Dalton, Anna T. Gallagher, T. G. Galvin, D. M. Kelleher, Timothy Kelleher, Maev Kennedy, D. J. K. McCarthy, P. N. Murphy, St. J. G. O'Connell, T. J. O'Connor, J. F. O'Donovan, D. A. O'Sullivan, and Beatrice G. Simmelkiar.

Part I.—T. F. Coleman, J. J. Hennessy, J. P. Kenefick, M. S. Murphy, P. J. Murphy, W. P. Navin, Mary L. Neville, J. S. O'Dwyer, M. G. O'Mahony, John O'Regan, and P. J. O'Sullivan.

Part II.—Matthew Bennett, J. A. Desmond, Diarmuid Herlihy, Thomas McCracken, and J. A. A. Ryan.

King's College, London

Dr. D. B. Taylor has been appointed lecturer in physiology at the college.

French Decoration

The French government have conferred the order of palmes d'Officier d'Académie on Dr. G. Gregory Kayne.

Welsh National School of Medicine

Dr. F. R. Magarey and Dr. H. D. Davies have been appointed demonstrators in the department of pathology and bacteriology. Dr. T. E. D. Beavan and Dr. Emily Williams have been appointed junior assistants in the medical unit.

Harveian Society of London

The summer meeting of this society will be held at the Associated British Picture Corporation, Elstree, on Saturday, July 15. Members of the society and their friends should meet inside the gate of the corporation between 2.45 and 3 P.M.

Social Hygiene Congress

The ninth Imperial Social Hygiene Congress will be held at B.M.A. House, Tavistock Square, London, W.C.1, from July 10 to 14, under the presidency of Mr. L. S. Amery, M.P. Lord Horder will preside over a conference on social and economic barriers to marriage. Dr. Letitia Fairfield and Dr. Socrates Noronha (Bombay) will speak in a discussion on medical and social coöperation; and Sir Arthur MacNalty will take the chair at a session devoted to technical, medical and administrative aspects of venereal disease at which Colonel L. W. Harrison, M.B., and Dr. R. C. L. Batchelor will read papers. Dr. Ernest Prebble and Dr. Gordon Bates, general director of the Health League of Canada, will discuss how to ascertain the incidence of venereal disease in a community. An all-day session will be given up to a conference on overseas nursing. Dr. A. Cavaillon, inspector-general of the French ministry of public health, will read a paper on social service in the anti-venereal campaign. Medical delegates are to visit the L.C.C. Whitechapel clinic. Further information may be had from the secretary of the British Social Hygiene Council, Tavistock House South, Tavistock Square, London, W.C.1.

Vacancies

For further information refer to the advertisement columns

Barrow-in-Furness.—County borough deputy M.O.H. and asst. tuber. O., £550.
Birmingham City.—M.O. £500.
Bootle General Hospital, Liverpool.—H.P., general H.S., H.S. to spec. depts., and cas. O., each at rate of £150.
Bristol Royal Infirmary.—Res. med. appts., at rate of £150–£80
Bristol Royal Infirmary and Bristol General Hosp.—Two hon. anæsthetists. Also hon. asst. obstetrician.
Burnley, Victoria Hosp.—H.P., at rate of £150.
Cardiff, King Edward VII Welsh National Memorial Association. Res. M.O. for Glan Ely Hosp., £350.
Cardiff Royal Infirmary.—Hon. asst. physician.
Coventry and Warwickshire Hosp.—Res. M.O., £300.
Dewsbury County Borough.—Deputy M.O.H. and deputy school M.O., £600.
Dewsbury and District General Infirmary.—Sen. H.S. and second H.S., £200 and £150 respectively.
Dover, Royal Victoria Hosp.—Second R.M.O., £140.
East Ham Corporation.—Asst. M.O.H., £500.
East Ham Memorial Hosp., Shrewsbury Road, E.7.—Hon. radiologist.
Eastbourne, Royal Eye Hosp., Pevensey Road.—H.S., at rate of £100 and £175.
Essex County Council.—District tuber. officer, £700.
Essex County Council and Thurrock Urban District Council.—Asst. county M.O.H., £700. Also asst. county M.O.H. and asst. M.O.H., £500.
Evelina Hosp. for Sick Children, Southwark, S.E.1.—H.S., at rate of £120.
Glasgow Western Infirmary.—Asst. radiologist, £400.
Gravesend and North Kent Hosp.—Jun. H.S., at rate of £120.
Grimsby and District Hosp.—Res. officers, at rate of £225 to £150.
Guildford, Royal Surrey County Hosp.—H.S., at rate of £150.
Hampstead General Hosp., Haverstock Hill, N.W.3.—H.S. and H.P., each at rate of £100.
Hosp. for Tropical Diseases, Gordon Street, W.C.1.—Three H.P.'s, each at rate of £120.
Hounslow Hosp.—H.P. and cas. O., at rate of £100.
Hull, Beverley Road Institution.—Asst. M.O., £350.
Hull Royal Infirmary.—Second H.P., at rate of £150.
Ilford, King George Hosp.—Res. M.O., £150.
Ipswich, East Suffolk and Ipswich Hosp.—H.S., and cas. O., each £144.
Kettering and District General Hosp.—H.P., at rate of £150.
Kingston County Hosp., Wolverton Avenue.—Res. asst. M.O., at rate of £250.
Lancaster Royal Infirmary.—Jun. H.S., at rate of £130.
Leeds Jewish Hosp., 9, Leopold Street.—Res. M.O., £200.
Leicester, City Isolation Hosp. and Sanatorium, Groby Road.—Res. M.O., at rate of £300.
Liverpool Heart Hosp., Oxford Street.—H.P., at rate of £100. Also clin. assts.
Liverpool School of Tropical Medicine.—Lecturer in parasitology, £700.
London Chest Hosp., Victoria Park, E.2.—Med. reg., £175.
London County Council.—Sen. asst. M.O. (grade II), £500. Asst. M.O.'s (class I), each £350. Also asst. M.O.'s (class II), each £250.
London Hosp., E.1.—Surgeon.
London University.—University readership in morbid anatomy, tenable at British Postgraduate Medical School, £800.
Manchester, Christie Hosp. and Holt Radium Institute, Withington. Sen. and jun. res. surg. O.'s, each at rate of £150.
Manchester, Langho Colony for Sane Epileptics.—Med. supt. £1050.
Manchester, Park Hosp., Davyhulme.—Res. surg. O., £500.
Manchester Hosp. for Consumption and Diseases of the Throat and Chest.—Hon. asst. laryngologist.
Manchester Royal Infirmary.—Hon. asst. surgeon. Jun. asst. M.O. in radiological dept., £350. Med. chief asst., £300. Chief asst. to surgical unit, £250. Res. surg. O., £200. Also H.P.'s and H.S.'s, each at rate of £50.
Margate and District General Hosp.—Res. M.O., £150.
Middlesbrough, Poole Joint Sanatorium, Nunthorpe.—Med. supt., £900.
National Hosp., Queen Square, W.C.1.—H.S., £100.
Nottingham City Mental Hosp.—Sen. asst. M.O., £580.
Nottingham General Hosp.—H.P., at rate of £150.
Paddington Metropolitan Borough.—Temporary asst. M.O. for air raid-precautions services, £500.
Pontefract General Infirmary and Hydes Hosp.—Sen. res. surg. O., at rate of £175 to £200.
Prescot, Whiston County Hosp.—Sen. res. M.O., £400.
Preston County Borough.—Asst. M.O. for maternity and child welfare, £500.
Prestwich, near Manchester, County Mental Hosp.—Asst. M.O., £550.
Princess Elizabeth of York Hosp. for Children, Shadwell, E.1.—Dental surgeon.
Redhill, East Surrey Hosp.—Sen. H.S., £150.
Romford, Oldchurch County Hosp.—Asst. res. surgeon, £350.
Royal Cancer Hosp., Fulham Road, S.W.3.—Res. M.O., £200.
Royal National Orthopædic Hosp., 234, Gt. Portland Street, W.1.—Surg. reg. for country branch, £300. Also two H.S.'s for country branch, each at rate of £150.
Royal Naval Dental Service.—Dental officers.
Royal Naval Medical Service.—Medical officers.
St. Mark's Hosp. for Cancer, &c., City Road, E.C.1.—H.S., at rate of £120.
St. Peter's Hosp. for Stone, &c., Henrietta Street, Covent Garden, W.C.2.—H.S., at rate of £75.
Salisbury General Infirmary.—H.S., at rate of £125.
Sheffield Royal Infirmary and Hosp.—Hon. second dermatologist.
Southampton County Borough.—Deputy M.O.H., £720.
Southend-on-Sea General Hosp.—First H.S., at rate of £100.
Stafford, Prestwood Sanatorium.—Jun. asst. M.O., at rate of £300.
Sunderland, Children's Hosp.—H.P. and H.S., each at rate of £120.
Taunton, Taunton and Somerset Hosp.—H.S., at rate of £125.
Tavistock Clinic, Malet Place, W.C.1.—Training fellowship, £450.
Truro, Royal Cornwall Infirmary.—H.P., £120.
Ventnor, Royal National Hosp. for Consumption.—Asst. res. M.O., at rate of £250.
Walsall General Hosp.—Res. surg. O., £300.
West End Hosp. for Nervous Diseases, Gloucester Gate, N.W.1.—Two res. H.P.'s, each £125.

Medical Diary

July 10 to July 16

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.

TUESDAY.

Psychiatry.—8.30 P.M., Dr. C. Killick Millard and Dr. Letitia Fairfield: Euthanasia and the Psychoses.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

WEDNESDAY.—10 A.M. (Royal Pavilion, Brighton), annual meeting. 2.30 P.M., Dr. A. Helen Boyle: Watchman, What of the Night? (Presidential address.)

THURSDAY.—10 A.M. (Brighton County Borough Mental Hospital, Haywards Heath), Dr. W. J. T. Kimber, Dr. Lamorna Hingston, Dr. Twiston Davies, Dr. James Flind, Dr. Noel Harris, Sir Hubert Bond: Early Treatment for Mental and Nervous Disorders. 2.30 P.M., Dr. E. A. Carmichael, Mr. G. D. Greville and Mr. S. G. Tudor Jones, Dr. D. J. Watterson: Symposium on Epilepsy.

FRIDAY.—9.45 A.M. (Royal Pavilion), Dr. A. Meyer, Mr. W. Grey Walter, Mr. Norman Dott, and Prof. F. L. Golla: Symposium on Epilepsy. 2.15 P.M., Dr. J. Tylor Fox, Dr. G. E. Graves Peirce, Dr. W. McCartan and Dr. J. Carson, Dr. Guy Millman, Dr. I. Frost: Symposium on Epilepsy (contd.).

PADDINGTON MEDICAL SOCIETY.

THURSDAY.—3 P.M., visit to the Metropolitan Water Board, Kempton Park (Hanworth Road, Sunbury).

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY.—4 P.M. (11, Chandos Street, W.1), Dr. W. Norwood East: The Problem of Alcohol and Drug-addiction in Relation to Crime.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.

TUESDAY.—4.30 P.M., Sir Arthur Hall: Meningitis and Acute Infections of the Central Nervous System.

WEDNESDAY.—Noon, clinical and pathological conference (medical.) 3 P.M., clinical and pathological conference (surgical.).

THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Dr. A. A. Moncrieff: Hygiene of the Newborn Child.

FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. J. B. Hume: Hernia and Its Treatment.

Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.

THURSDAY.—2 P.M., Dr. Donald Paterson: The Leukæmias. 3 P.M., Dr. R. Bonham-Carter: The Early Recognition of Infectious Fevers.

Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST. GEORGE'S HOSPITAL, S.W.1.

THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.

WESTMINSTER HOSPITAL, Horseferry Road, S.W.1.

TUESDAY.—5 P.M., demonstration of cases of Lindau's disease and of cerebral tumour.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.

MONDAY to SUNDAY.—ALL SAINTS' HOSPITAL, Austral Street, S.E.11, afternoon course in urology.—LONDON CHEST HOSPITAL, Victoria Park, E.2, Sat. and Sun. course in diseases of the heart and lungs.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY.—4 P.M. (St. James's Hospital, Ouseley Road, S.W.12), Dr. C. E. Lakin: demonstration of medical cases.

NOTES, COMMENTS, AND ABSTRACTS

MEDICAL ASPECTS OF THE NEW CHINA-BURMA ROUTE*

BY R. C. ROBERTSON, M.C., M.D. Glasg., M.R.C.P.E., D.P.H.

HEAD OF THE DIVISION OF PATHOLOGY AND SCIENCES, LESTER INSTITUTE OF MEDICAL RESEARCH, SHANGHAI; COMMISSIONER, LEAGUE OF NATIONS ANTI-EPIDEMIC UNIT NO. 2 FOR SERVICE IN CHINA

THE League of Nations Epidemic Commission to China has specially entrusted me with the task of surveying the region extending from Kunming to the Burma frontier with a view to elaborating remedial measures and to advising the Chinese government about the control of epidemics.

The opening of the China-Burma highway marks a new epoch in means of communication in the Far East and is of interest to epidemiologists in that India and China will be in closer contact, with an increasing risk of the transfer of epidemic diseases from one country to the other. There is reason to believe that cholera has been carried over the mountainous border from Burma into Siam on several occasions and has swept down the valleys towards the sea. Plague has visited Yunnan province periodically during the past centuries, having been imported by caravans from Tibet or from Burma. In 1866 it ravaged Yunnanfu. During the last few decades plague has been quiescent, but the province can easily be reinfected, especially now that motor transport is available. Plague-infected rats might easily be carried in cargo coming into China by the new highway. The Chinese government is aware of this danger and is about to establish health stations at important points.

PRESENT STATE OF CHINESE TRADE ROUTES

The importance of this new entrance to China cannot be exaggerated in view of the present situation which has developed out of the Sino-Japanese hostilities. Many of China's trade routes have been strangled. The lines of communication from the great seaports of Shanghai and Hong-Kong have been completely disrupted. The worst blow followed the fall of Canton, when not only was Hong-Kong rendered impotent as a source of supply but the railway line from Canton to Hunan and the north was effectively blocked. More important still, the great river systems with the West and Pearl rivers are no longer free to transport cargoes to Kwangtung and Kwangsi. The Yangtze river is effectively blocked as a trade route from Shanghai to unoccupied China. Even local traffic above Hankow is at a complete standstill owing to the fact that the junction with the Tung Ting lake and the Siang river is the scene of warfare. This paralyses river communications with Hunan province. Changsha, once one of the busiest ports in the interior, has been destroyed by fire and has no outlet by river. There is still a railway from Changsha to Hengyang and thence to Kweilin in Kwangsi but no link with the coast and the outside world. The fall of Nanchang has now cut off the Chekiang railway, by which the port of Wenchow could be reached by a circuitous route. The Japanese navy has rendered the ports of Kwangchowwan (Fort Bayard) and Pakhoi useless as a means of entry to the country.

The only deep-sea port at present available for the unloading of cargoes for China is Haiphong, in French Indo-China. The French railway from Haiphong to Yunnanfu is a metre-gauge line which passes over very mountainous country with severe gradients. There is a very limited rolling stock, and the line can handle only a small fraction of China's wanted imports; it cannot even deal with the unloaded cargo now congesting Haiphong docks. The French, at the request of the Japanese, have ceased to allow munitions to be transported on this line into China. There is no direct highway from French Indo-China to Yunnan province; the sole motor highway by which China can be reached is a narrow tortuous road entering Kwangsi province near Lungchow. This road passes Nanning, which is not far from the coast and is liable to be interrupted by a landing at Pakhoi at any time. The Nanning route is chiefly used for motor-lorry transport and the importation of new motor vehicles. The only other ways of bringing supplies into unoccupied China are by a northern route through Soviet Russia and by the new Burma-Yunnan highway.

NEW CHINESE HIGHWAY

The British have always realised that a railway from Burma through Yunnan to Szechwan would benefit imperial trade, and that the port of Rangoon could become the starting-point for a connexion between the two great waterways, the Irrawaddy and the Yangtze. The railway from Rangoon to Mandalay had been extended to Bhamo, on the Irrawaddy river, and to Lashio, not far from the Yunnan border, at the end of last century (see the accompanying map). The Chinese are now constructing the new railway which will eventually connect Lashio with Kunming. This railway misses some of the difficult country which a connexion with Bhamo would involve, but it has to cross the valleys of the Salween and Mekong rivers. The natural obstacles are tremendous, and it will be several years before the railway is finished; but the highway has already been completed in a remarkably short time by 200 engineers and 160,000 men (mostly conscript labourers) and lorries carry munitions for China's defence along it daily.

The mortality among the workmen on this road was very great, especially during the construction of the Burmese sections from Lashio to Anting (see map) where the route passes through some of the worst malaria districts of the world. No accurate estimate of the ravages of malaria can be made, for no organised medical service existed during the construction of the highway. The government highway bureau employed a few doctors during the autumn of 1938 and distributed quinine to the sufferers, but reports are still coming in of many fatalities, especially in the districts near Mongshih, where malignant tertian malaria is rife.

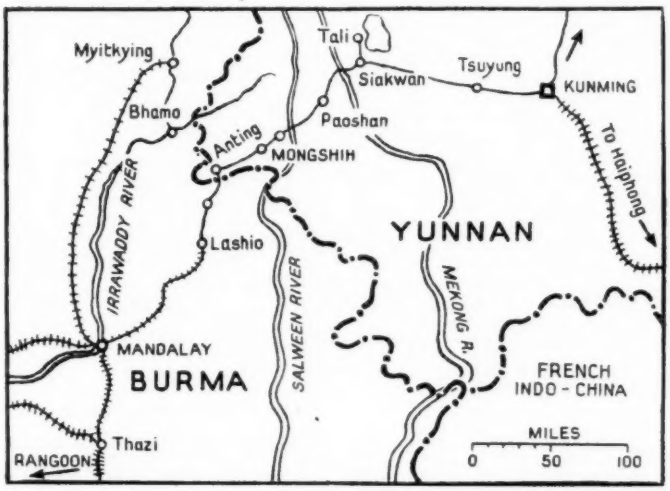
MALARIA IN YUNNAN

The valleys of the great rivers which flow southwards through Yunnan province have always shown a heavy incidence of malignant malaria. These rivers are the upper waters of the Red, Mekong, and Salween rivers. Malaria is not so prevalent in the higher altitudes. Kunming is relatively free, except for a few months after the rainy season, when mosquitoes

* This paper has been abbreviated for publication, and a proof has not been submitted to the author.

breed in temporary pools. During the greater part of the year the climate of the Yunnan plateau is dry and not favourable to the breeding of mosquitoes.

A very different situation exists in the valleys towards the southern and western parts of the province, where an annual rainfall of about 120 in. is common and malaria is endemic to a disastrous extent. It is very probable that within recent years the disease has become much worse owing to improved communications. For instance, before the construction of the railway line from French Indo-China to Yunnanfu the city of Szemao in the southern part of the province was a flourishing centre with 160,000 inhabitants. Although this city is well away from the line and can only be reached by mule tracks or sedan chair, it has been undoubtedly affected by an interchange of population during the last twenty years. Owing to the ravages of malaria the number of inhabitants has been reduced to 50,000. Many other centres have likewise been affected. The construction of the French railway is said to have taken a terrible toll of life, the chief mortality being from malaria.



ANTI-MALARIA MEASURES

The chief danger of malaria along the new highway lies at present on the western portion of the route, where the disease is endemic among the inhabitants of all the towns and villages west of Paoshan (see map). Travellers along the highway, the drivers of the thousands of trucks which are beginning to use the road, are all exposed to infection if they stop in the villages, where up to now there is no sanitary control. The measures which are being instituted include the placing of mobile anti-malaria units supported by the League of Nations in the towns where malaria is endemic; intensive treatment of malaria patients with quinine; the supply of quinine as a prophylactic to travellers; the establishment by the National Health Administration of the Chinese government of general medical clinics, one to every 100 km.; and the investigation of the local anophelines by the League of Nations Kunming-Burma epidemiological survey unit.

In the immediate future it is hoped to improve the sanitation round hotels used by travellers, bus stations, and the local health-centres by drainage schemes and screening. To control malaria among the workers on the new railway it is hoped to establish anti-malaria clinics at the most useful points. Malaria cannot be controlled along this line with the efficiency with which it has been controlled in the Panama canal zone. The cost is prohibitive in China, and, to prevent a great wastage of human life, the funds must be supplied from outside China. The League of Nations is supplying quinine for the treatment of malaria patients in this region, but much more is needed. Contributions of quinine from the governments of neighbouring and other countries would be a most useful way of helping to render healthier this important international trade route.

GOITRE

There is an extremely high incidence of goitre in Yunnan province, together with obvious symptoms of cretinism, especially along the new highway. In some gangs of men and women working on the road the incidence of goitre is 60 per cent. It is not noticed in the children.

It is generally admitted that the addition of iodine to the diet even in very small quantities is sufficient to prevent further development of this condition, but iodine is very deficient in these parts, not only in the salt but also in the vegetation. This is probably due to the geological conditions of the area, for the salt which comes from the Yunnan mines is deficient in iodine. This is not the case with the mines of Szechwan. Normally some 70 per cent. of the salt needs of China are supplied with sea salt, which contains an adequate amount of iodine. The Japanese military occupation has cut off the hinterland of China from its coastal supply, and the deprivation of the normal sources of salt is one of the greatest hardships. To make up for this cutting off of the normal supply of sea salt the salt wells of China are being increasingly exploited and can probably supply the amount of sodium chloride needed but not a sufficiency of iodine.

Large areas of unoccupied China are now being supplied with this iodine-free salt from the Yunnan mines, and the consequences of a deficiency of iodine are bound to become manifest, particularly if hostilities are prolonged. In Yunnan province the typical area of production is the Hoching salt wells, where the brine is pumped out through bamboo pipes to vats and there boiled down. This has up to now been very largely a "cottage industry." The vats are in small houses, and each family controls and operates only a few vats. The output, however, is carefully recorded by the Salt Administration. The salt crystallised is then transported to the main market in Kunming. The output from this district amounts to some 1330 tons a year. To provide adequate iodine content in the salt requires the addition of about 5 mg. of potassium or sodium iodide to each kg. of common salt.

Another way of supplying enough iodine in the ordinary diet is to use edible seaweed. The iodine in seaweed is said to be a hundred times more active than in potassium iodide. The daily need is less than 0·04 mg. of iodine a head (von Fellenberg's estimate

is only 0·014 mg.). It is recommended that a small amount of edible seaweed (about 10 g.) should be included in the diet twice a month. At the moment it is very difficult to import seaweed to the goitre districts, but some of it reaches Kunming by the Indo-China railway. The inhabitants of Kunming are not heavily affected by endemic goitre, although the villages in the surrounding districts produce many sufferers.

While the question of supplementing the crude native salt with iodides is being considered, immediate steps have been taken to give a weekly dose of 1–2 mg. of iodine in the form of potassium iodide to school-children and students in universities and other institutions where the personnel is under control or discipline. It remains to be seen if, in the absence of preventive measures, the immigrants recently arrived from other provinces or from the war-stricken zones will acquire enlarged thyroids when they reside in goitre districts.

OPIUM

The smoking of opium is very prevalent in Yunnan, where the drug is cheap and easily obtained. Moderate addicts do not seem to have their health noticeably affected. The question of control is at the moment outside the scope of the practical sanitarian. One can but hope that in due course the government will take the matter up energetically as in other provinces, particularly Kwangsi, during past years. Yunnan may be said to have long been one of the neglected provinces in social reform in modern China. It is only since the war that it has come into the limelight. There can be now no turning back, for Yunnan is, and promises to remain, the most important province of western China; it is no longer the backdoor to China but is destined to play an increasingly important part in her trade with Britain and other foreign countries.

A HOSPITAL SHIP

THE Spanish troops who lately took refuge in France included 12,000 wounded, for whom the local resources of hospitals, material, and personnel were insufficient. The French government accordingly converted two steamships into hospital ships and sent them to Port Vendres. Marcel Arnaud, who was appointed chief surgeon to the larger of these two ships, the *Maréchal Lyautey*, described his experiences to the French Academy of Medicine on May 16 (*Bull. Acad. Méd. Paris*, 1939, **121**, 671). During her month's stay at Port Vendres the *Maréchal Lyautey* dealt with over 1500 Spanish wounded, having 1200 on board at once. She also treated about 300 out-patients from the town. There were, Arnaud says, 1080 beds, with palliasses and bedclothes, in four well-ventilated holds furnished with lavatories and water-closets. The second-class and third-class cabins, each with four or five beds, were reserved for the more seriously wounded and for those who had just been operated on. There were five operating-theatres: three for septic cases; one for clean cases; and one for plasters. One of them was also used as a dressing-station, and there were five other dressing-stations, four of them being in the holds. Two ambulances were used for evacuating the patients, a lorry for carrying supplies, and a car for the chief physician. There were five surgical teams, each consisting of a surgeon and two assistants, and a medical team of three physicians, of whom one acted as radiologist. Besides these the ship carried a dispenser, and another surgeon who specialised in treating fractures of the mandible. The forty French red-cross nurses were later joined by three Spanish nurses. Arnaud adversely criticises their floating head-dress, which was very inconvenient when dressing a wounded man lying on the ground, was always getting caught up in wards crowded with beds, and was dangerous in the operating-theatre. He also suggests that it should be compulsory for every one of them to carry, as part of her uniform, a stout pair of scissors for cutting bandages.

Forty of the least severely wounded Spaniards were pressed into service as interpreters, stretcher-bearers, additional nurses, and in different fatigue duties. One of them became assistant to the radiologist, another acted as masseur, and others were donors of blood. Apart from numerous radioscopic examinations, over 200 radiograms were made with the help of portable apparatus. Major operations averaged 6 a day; 800 plasters were removed and only 66 put on—a fact which possibly illustrates the difference between French and Spanish ideas of dealing with war wounds. There was only one case of gas-gangrene; it had come from another hospital. There was no tetanus and no death due to anæsthetic. The deaths totalled 11, of which 9 were in cases of severe wounds previously operated on in another hospital, 1 was from cerebral hæmorrhage in a man whose wound had healed and who was ready for evacuation, and the remaining 1 was from uræmic coma in a man four days after he had had a fracture reduced on board.

All the patients except those whose wounds needed immediate attention were deloused as soon as they arrived. This was done on the after-deck. Their clothes were sent to the steam disinfector on board. After this process many of the wounded were left completely naked, for their clothes were so dirty and so ragged that very few of them could be used after disinfection and despite repeated requests it took three weeks to obtain shirts, trousers, and sandals in sufficient quantity to clothe them again. This was a striking contrast to the supply of medical and surgical material. With only two days' notice it was possible to equip four operating-theatres, and the complaint was made that too much material had been sent.

EPIDEMIC DIARRHŒA OF THE NEWBORN

DURING the years 1926–36 there was in New York city a steady decline in the death-rate of the older group of infants but only a very slight decrease in the neonatal period. The rate in infants from one month to one year old dropped from 35·5 to 17·8 per 1000 live births, whereas that in infants from birth to one month decreased only from 32·3 to 27·7. Although the neonatal deaths were no doubt partly due to birth injury, congenital malformations and prematurity, S. Frant and H. Abrahamson (*N.Y. St. J. Med.* 1939, **39**, 784) urge that the important part played by infections, especially diarrhœal diseases, as a cause of illness and death has not been sufficiently emphasised. In 27 outbreaks of infantile diarrhœa in New York city between July, 1934, and December, 1937, the total number of exposed live-born babies was 5082, of whom 750 were attacked and 356 died, the mortality being 47 per cent. There was no instance of the disease spreading to older children or adults. Sex or race did not affect the incidence, nor was there any significant difference between artificially fed and breast-fed infants. The highest percentages of morbidity and mortality were found in the winter months. Bacteriological examination of the nasopharyngeal secretions and of the stools, and agglutination tests of the blood were consistently negative.

During November, 1937, a disastrous epidemic of infectious diarrhœa broke out in the Memorial Hospital at Worcester, Massachusetts. According to A. M. Kimberly (*New Engl. J. Med.* April 20, 1939, p. 664) the infection could be traced to an infant discharged from a hospital in New York city, and the clinical pictures of the babies at Worcester were identical with those in New York. Of the six babies affected five were in hospital for prematurity or feeding difficulties and were grossly underweight, and

all these five died. Nearly all the babies acquired some kind of respiratory infection before death, but the post-mortem findings in the gastro-intestinal tract were slight. The predominant organism in the stools was *Bacillus welchii*, which was not regarded as significant, and Kimberly suggests that the primary cause was a virus.

TOTAL ŒSOPHAGOPLASTY

THE radiological appearances of an œsophagoplasty performed some six or seven years previously are described by P. L. Fariñas in *Vida Nueva* (April 15, 1939, p. 194). The original operation had been done by D. Fernández, who reported the case to the Pan-American Medical Association in January, 1938. It was done in three stages: in the first a jejunostomy was made in the third left intercostal space close to the sternum, together with an anastomosis between the stomach and the jejunum and another between the upper and the lower parts of the jejunum; two months later the upper part of the œsophagus was used to form an œsophagostomy 3 cm. above the clavicle; and in the third stage an artificial œsophagus of skin was constructed to connect the œsophagostomy with the jejunostomy. With the aid of radio-opaque liquids and pastes Fariñas studied the action of this artificial œsophagus and observed considerable dilatation of the cervical (true) œsophagus and a circular stenosis where the artificial gullet began. The meal was passed by strong contractions of the cervical œsophagus into the artificial, where it caused some distension owing to the partial resistance to its further progress. Later, when the whole of the artificial œsophagus was filled it was dilated uniformly except in its terminal portion. Here there was a slight kink where the artificial œsophagus joined the jejunum, and just proximal to it there was further dilatation or even ectasis. The cutaneous portion of the tube, after the meal had passed through it, remained distended with air which had been swallowed. The meal passed through the jejunal portion to the stomach in the same way as it does through a normal jejunum and was subjected to segmentation by the action of the valvulæ conniventes. Some of the meal entered the stomach and some passed through the remainder of the jejunum. Fariñas concludes that the patient's artificial œsophagus works perfectly.

DUM-DUMS UNDER X RAYS

IN any war the other side always uses dum-dum bullets, and on the slightest pretext a protest is made, as though their use were a very serious infringement of the rules of "civilised" warfare. As we have previously pointed out (*Lancet*, 1936, **1**, 1309), an ordinary rifle bullet sheathed with nickel and fired at less than 200 yards' distance, with a muzzle velocity of over 2300 ft. per sec., causes a large ragged wound of entry, because of the terrific force of impact and because it wobbles in the earlier part of its flight. Ignorance of this fact often leads to the accusation that dum-dum bullets have been used. On the other hand, a soft-nosed bullet, in which the sheath is not continued to the tip, is used in elephant-guns for killing big game; it is not meant to pass through the animal's body but to stop the beast with a violent blow. Thus the effect of a dum-dum bullet can be produced by a standard bullet fired at short range with a high-velocity rifle, or by a soft leaden bullet fired with a low-velocity firearm. Further, a hard sheathed bullet can be "dum-dumised" by partly stripping off its sheath.

A. Grilli has attempted to distinguish these different types of missiles radiographically, both from his experiments on wooden planks and from human material examined in the military hospital for native troops at Asmara during the Abyssinian war and the subsequent "police operations" (*Quad. di Radiol.* 1938, n.s. **3**, 114). He recognises that it is very difficult to decide from the appearance of a wound whether it was due to a dum-dum bullet, because a similar effect can be produced by an ordinary bullet fired at close range or by a ricochet. The same remark applies to a wound caused by an explosive bullet (which Grilli accuses the Austrians of being the first to introduce in the Great War). Even radiographically no distinction can be made between true dum-dum—i.e., soft-nosed—and "dum-dumised" bullets; both undergo much deformation and litter the wound track with particles of the metal sheath. On the other hand, radiography distinguishes clearly between standard sheathed bullets and those with a partial sheath or none. If the bullet has not struck a bone, it can sometimes be identified by its shape, calibre, length, and deformation, and it is possible to say whether it is a ricochet. Regulation bullets sometimes leave metallic particles of the sheath, which of necessity does not cover the base of the bullet and so can be stripped upwards and broken off. Deformation of a bullet in a wound is not always clear evidence, because it may have struck something else before entering; but a naked bullet (without a sheath) becomes deformed in a typical way during its trajectory and can be recognised by flattening of the nose and expansion of the base.

TANGANYIKA ARROW POISONS

THE use of poisoned arrows by the Ethiopians was described by Theophrastus in the fourth century B.C., and there have been intermittent references to these lethal weapons in the writings of Portuguese and other Europeans visiting Africa ever since. Their main use now is in killing game, but they are still of medicolegal interest in parts of East and Central Africa, and according to W. D. Raymond (*E. Afr. med. J.*, March, 1939, p. 419) 7 out of 39 post-mortem examinations done lately in the Musoma district have revealed evidence of their homicidal use.

The arrows are some 3–5 in. long, with an iron tip wrapped with a vegetable material soaked in the poison. In 1888 Arnauld isolated from Somali arrows a toxic principle which he named ouabain, prepared from *Acokanthera ouabaio*, and Raymond has found that most of the poisoned arrows in Tanganyika are tipped with preparations of one of the three indigenous acocanthera, though some carry extracts obtained from *Strophanthus emini*, or from local varieties of adenium, scilla, or urginea. All of these contain glucosides with a cardiac action similar to that of strophanthin, and it is remarkable evidence of the accuracy of observation of these tribes that they have utilised almost all the known indigenous cardiac glucosides in this way. Raymond has found some arrows carrying enough poison to kill 250 men, and he says that in human subjects death usually follows a wound in from twenty minutes to two hours. There are no characteristic post-mortem findings in arrow poisoning, but some African chiefs say they can recognise it by the appearance of the skin.

INTESTINAL OBSTRUCTION BY IMPACTED FOOD

A CURIOUS case of acute intestinal obstruction is described by H. J. Postel (*Ned. Tijdschr. Geneesk.* 1939, **83**, 1959).

The patient, a man of 72, walked into the surgery at 9 o'clock at night, complaining of acute abdominal colic. He had taken a meal at noon, consisting only of mashed potatoes. Three hours later he had vomited, and colicky pain had begun, at first in the epigastrium and later all over the abdomen. The bowels had acted two hours after the onset of the pain, but the patient noticed that no flatus was passed. Before the attack he had been in good health. Physical examination revealed nothing but slight distension of the central part of the abdomen. A mild sedative was prescribed and the patient sent home to bed.

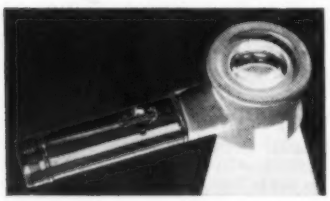
Next morning he was no better, and complained of nausea. The tongue was dry and coated and the abdominal distension had increased. He was therefore sent to

hospital for operation. This disclosed a soft mass impacted in the small intestine about 12 in. above the ileocæcal valve, with considerable distension of the bowel above it. The foreign body was removed and turned out to be a piece of dried apple which had swollen after ingestion so as to obstruct the bowel. The patient on being questioned recollected that he had eaten a few rings of dried apple, which for lack of teeth he had been unable to chew properly.

The patient recovered from the operation, but a fortnight later had a pulmonary embolus and died.

AN ILLUMINATED MAGNIFIER

THE "Partington" illuminated magnifier illustrated here is intended to supply a good light and a moderate degree of magnification for examining or carrying out minor manipulations on the skin or elsewhere. It is some 7½ in. long and consists of a white bakelite head and a metal handle. The head contains a lens system giving a magnification of 10 and a small electric lamp supplied by a dry battery in the handle. When the instrument is placed flat on the skin its surface is accurately in focus, and there is no distortion even at the extreme edge of the field. An aperture at the side of the head allows a forceps or scalpel to be used under full observation.



The magnifier can be obtained from any instrument-maker, price 27*s.* 6*d.*, and it should find many uses in the consulting-room. A more powerful model is now being developed which will give a much higher magnification for eye work and the like.

BACTERIOLOGY WITHOUT TEARS

IN his "Man Against Microbe" (London: English Universities Press. 1939. Pp. 304. 7*s.* 6*d.*) Prof. J. W. Bigger, of Trinity College, Dublin, has tried to present the subject of bacteriology to the intelligent layman in a comprehensive and attractive form, and he has undoubtedly succeeded. In the first section he explains what microbes are, how they are studied and identified by microscopic and cultural methods, their importance in nature and their rôle in the production of disease. In the last two chapters in this section he shows how the animal body attempts to cope with invaders and outlines the methods used in studying the defence mechanism of the body. In the second section Professor Bigger describes the historical development of our knowledge of bacteria and their relation to disease, and in the final section the ways in which disease is contracted and spread amongst men and animals. To the lay reader the first section may seem rather heavy going, and though the descriptions of technical methods that it contains are accurate and clear some of them might well have been omitted. The rest of the book makes up for the pedestrian beginning by being full of interest, though there is no tendency to dramatise a subject which needs no such treatment. Incidentally the book indicates clearly the rationale and value of our present measures of specific treatment and prophylaxis against microbic diseases, and should impress on the reader the rapid advances in knowledge that have been made possible by animal experiment.

BRITISH THUNDERSTORM SURVEY.—Dr. F. R. Humphreys has undertaken on behalf of the Thunderstorm Census Organisation to collect information about causes of injury by lightning or electric current to human beings. He would be grateful for help in obtaining particulars of personal injuries sustained. He states that "no publicity will be given to individual cases, and the information will only be used for scientific record." Copies of the questionnaire which Dr. Humphreys has drawn up may be had from him at 15, Denton Road, Wokingham, Berks.

Appointments

BRISCOE-SMITH, J. H., M.B. Birm., temporary assistant medical officer for St. Pancras.

CLARK, W. B., M.B. St. And., D.P.H., assistant medical officer of health for Newport, Mon.

CRUICKSHANK, ALEXANDER, M.B. Aberd., F.R.C.S., assistant surgeon to the Queen's Hospital for Children, London.

DORRELL, E. W., M.B. Camb., F.R.C.S., assistant resident medical officer at the City of London Maternity Hospital.

EVANS, ABEL, M.B. Lond., M.R.C.P., hon. physician to the Cardiff Royal Infirmary.

GABB, W. H., M.B. Camb., M.R.C.P., medical officer at the Chelsea Hospital for Women's convalescent home, St. Leonards-on-Sea.

GARMANY, GERALD, M.B. Manc., resident assistant medical officer at Crumpsall Hospital, Manchester.

HARDMAN, JAMES, M.B. Birm., F.R.C.S., neurological surgeon to the Royal Sheffield Infirmary and Hospital.

LILLIE, D. C., M.B. Glasg., resident assistant medical officer at Crumpsall Hospital, Manchester.

OAKLEY, W. G., M.D. Camb., M.R.C.P., assistant physician to the diabetic department, King's College Hospital, London.

SUMMERHILL, J. H. E., M.R.C.S., resident medical officer at the City of London Maternity Hospital.

WITHERS, R. J. W., M.D., M.Ch. Belf., F.R.C.S.E., orthopædic registrar to the Royal Victoria Hospital, Belfast.

Births, Marriages and Deaths

BIRTHS

BLEWITT.—On June 30, at the Maternity Hospital, Liverpool, the wife of Captain Basil Blewitt, R.A.M.C.—a daughter.

BULLEID.—On July 2, the wife of Dr. A. H. Bulleid, of Midsomer Norton—a son.

CRAIG.—On June 25, at Framlingham, the wife of Dr. D. M. Craig—a daughter.

FREW.—On June 29, at Stafford, the wife of Dr. John Frew—a daughter.

GREIG.—On June 19, at the Westminster Hospital, the wife of Dr. M. T. Greig—a son.

HOUGHTON.—On June 28, at Solihull, the wife of Dr. A. C. Houghton—a daughter.

NEWMAN.—On June 30, the wife of Dr. James Newman, of Chichester—a son.

NUSSEY.—On June 30, at Bournville, Birmingham, the wife of Dr. A. M. Nussey—a daughter.

SMITH.—On June 5, in Poona, the wife of Captain Michael Smith, I.M.S.—a son.

MARRIAGES

BROWN—BASH.—On July 1, at St. Mary's, Ealing, Arthur Ivor Parry Brown, M.B., to Joyce Marion Bash.

NESFIELD—HIGGINS.—On June 24, at St. Mark's Church, Purley, John Clive Baird Nesfield, L.M.S.S.A., to Stella Mary Higgins.

DEATHS

FELDMAN.—On July 2, in London, William Moses Feldman, M.D. Lond., F.R.C.P., F.R.S.E., aged 58.

RAFFAN.—On June 28, at Huddersfield, James Raffan, M.D. Aberd., F.R.C.S.E., D.M.R.E., in his 56th year.

RANKING.—On July 4, Robert Maurice Ranking, M.D. Camb., M.R.C.P., of Tunbridge Wells, aged 63.

WATSON.—On June 27, at Harrogate, William Muir Crawford Watson, M.D. Edin., aged 72.

N.B.—A fee of 7s. 6d. is charged for the announcement of Births, Marriages, and Deaths.

NUTRITION AND THE PUBLIC HEALTH.—The proceedings of the National Conference on the Wider Aspects of Nutrition held by the British Medical Association last April have now been published under this title. Copies of the book (2*s.* 6*d.* post free) can be obtained from the association, B.M.A. House, Tavistock Square, London, W.C.1.